PSW-D112/DPS-12

Powered Subwoofer

SERVICE MANUAL

JBL Consumer Products Inc.
250 Crossways Park Drive
Woodbury, N.Y. 11797
1-800-336-4JBL in the USA

A Harman International Company

Rev G 8/2004

SAFETY INFORMATION

Warning

Any person performing service of this unit will be exposed to hazardous voltages and the risk of electric shock. It is assumed that any person who removes the amplifier from this cabinet has been properly trained in protecting against avoidable injury and shock. Therefore, any service procedures are to be performed by qualified service personal ONLY!

Caution

This unit does not have a power switch. Hazardous voltages are present within the unit whenever it is plugged in.

Before the amplifier is plugged in, be sure its rated voltage corresponds to the voltage of the AC power source to be used. Incorrect voltage could cause damage to the amplifier when the AC power cord is plugged in. Do not exceed rated voltage by more than 10%: operation below 90% of rated voltage will cause poor performance or may shut the unit off.

Leakage/Resistance Check

Before returning the unit to the customer, perform a leakage or resistance test as follows:

Leakage Current. Note there is no power switch on this unit. When the power plug is plugged in, the unit is live. Connect the unit to its rated power source. Using an ammeter, measure the current between the neutral side of the AC supply and chassis ground of the unit under test. If leakage current exceeds 0.5A, the unit is defective. Reverse the polarity of the AC supply and repeat.

Resistance. Measure the resistance from either side of the line cord to chassis ground. If it is less than 500k ohms, the unit is defective.

WARNING! DO NOT return the unit to the customer if it fails one of these tests until the problem is located and corrected.

Critical Components

All components identified with the IEC symbol in the parts list and the schematic diagram designate components in which safety can be of special significance when replacing a component identified with ⚠. Use only the replacement parts designated in the parts list or parts with the same rating of resistance, wattage or voltage.

List of Safety Components Requiring Exact Replacements (all parts POWER AMP PCB except TR2)

F1	Fuse SLO BLO 1.25A 250V UL approved
PWRCORD	SPT-2 or better with polarized plug, UL approved wire with the hot side to fused side. Use with factory replacement panel strain relief only.
TRX1	Transformer. Use only factory replacement.
C1, 2	4700uF,50V electrolytic filter caps. Be sure replacement part is at least the same working voltage and capacitance rating. Also the lead spacing is important. Incorrect spacing may cause premature failure due to internal cabinet pressure and vibration.
C6 (**Rev0**)	4.7uf 100V 80/-20% Electrolytic redial NP
C6 (**Rev1**)	4.7uf 100V 80/-20% Electrolytic redial NP
TR2	MPS A13 30V NPN(Darl)
DBR	Bridge Rect 200V Use only factory replacement.
R1	10M 0.25W 5% carbon film
R4a/b/c	0.1 0.5W 5% metal film
R9	3.3 5W 5% ceramic wirewound
R15	100k 0.5W 5% carbon film
R16, 17	1.8k 5W 5% ceramic wirewound
R33 **(Rev0) only)**	332 0.5W 5% carbon film
R50 **(Rev0) only)**	332 0.5W 5% carbon film
R52, 57	2.7k 5W 5% ceramic wirewound
R61	3.9k 3W 5% carbon film
S64AMI	Power output module. Use only factory replacement
Faceplate	Faceplate. Use only factory replacement
CMC1	Use only factory replacement
L1	Use only factory replacement
Fuse PCB	Use only factory replacement
Main PCB	Use only factory replacement

00465-2

IMPORTANT SERVICE NOTES: When testing the PSW-D112/DPS-12 Series amplifier, a load must always be connected to the output terminals, whether the woofer, or a 4 to 8 ohm resistive load.
All AC powered test instruments (meters, oscilloscopes, etc.) must have a floating ground, i.e., be connected to an isolation transformer.

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NOTE: CERTAIN DRAWINGS AND CONNECTIONS WERE DEPICTED INCORRECTLY IN SOME EARLY COPIES OF THE PSW-D112 AND DPS-12 OWNER'S MANUALS.

THEY INCLUDE:

1. DRAWING OF RCA LINE LEVEL INPUT/OUTPUT JACKS ON PAGES 3, 4, & 5; ALL CHANNELS - RIGHT SIDE SHOULD BE “LINE OUT”, LEFT SIDE SHOULD BE “LINE IN”.

2. CONNECTION ON PAGE 4 OF OWNER’S MANUAL - SINGLE CABLE DIRECT INPUT (FOR DOLBY DIGITAL OR DTS SURROUND); SINGLE CABLE FROM YOUR RECEIVER/PROCESSOR SHOULD CONNECT TO:
   Rev0 version - THE “CENTER CHANNEL LINE IN” JACK ON YOUR SUBWOOFER.
   Rev1 version - EITHER LEFT OR RIGHT INPUT JACK ON YOUR SUBWOOFER.

THOSE DRAWINGS ARE CORRECT IN THIS DOCUMENT, SEE PAGES 8 & 9.

GENERAL SPECIFICATIONS

Amplifier Power (RMS)	250 watts	
Driver 12"	High-Polymer Laminate	
Inputs	Line Level and Speaker Level	
Outputs	Line Level and Speaker Level	
Low-Pass Frequency	Continuously variable from 60Hz – 180Hz	
High-Pass Frequency	Continuously variable from 60Hz – 180Hz when using line-level inputs 150Hz when using speaker-level inputs	
Frequency Response	28Hz – low-pass crossover setting	
	PSW-D112	DPS-12
Dimensions (H x W x D)	17-1/2 x 17-1/2 x 19-1/8" (445 x 445 x 486mm)	22-1/8 x 17-1/2 x 17-1/2" (562 x 445 x 445mm)
Weight	40 lbs/18.2 kg	38 lbs/17.3kg

DETAILED SPECIFICATIONS

LINE VOLTAGE	Yes/No	Hi/Lo Line	Nom.	Unit	Notes
US 120vac/60Hz	Yes	108-132	120	Vrms	Normal Operation
EU 230vac/50-60Hz	Yes	207-264	230	Vrms	Normal operation, MOMS required

Parameter	Specification	Unit	Test Limits	Conditions	Notes
Amp Section					
Type (Class AB, D, other)	D		n/a		Class D Preferred...Sink required for Class AB
Load Impedance (speaker)	8	Ohms	n/a	Nominal	Z-curve required
Rated Output Power	250	Watts	150	1 input driven	Peak power
THD@ Rated Power	0.3	%	1	22k filter	160w (Power Bandwidth 30-100Hz) @ 120 VAC
THD @ 1 Watt	0.5	%	0.8	22k filter	
DC Offset	<20	mV-DC	10mV	@ Speaker Outputs	
Damping factor	>90	DF	>50		
Input Sensitivity					
Input Frequency	40	Hz		Nominal Freq.	1 input driven
Line Input	265	mVrms	±2dB	To Rated Power/ Vol @ Max	1 input driven: AP source Z = 600 ohms
Speaker/Hi Level Input	9.3	Vrms	±2dB	To Rated Power/ Vol @ Max	1 input driven: AP source Z = 25 ohms
Signal to Noise					
SNR-A-Weighted	100	dBA	90	Relative to rated output	A-Weighting filter
SNR-unweighted	75	dBr	70	Relative to rated output	22k filter
SNR rel. 1W-unweighted (22k)	65	dBr	55	relative to 1W Output	22k filter
Residual Noise Floor	2	mVrms	2.5	Volume @max, using RMS reading DMM/VOM (or A/P) , BW <20KHz	
Residual Noise Floor	1.5	mVrms(max)	2	Volume @max, w/ A/P Swept Bandpass Measurement (Line freq.+ harmonics) , BW<20Khz	
Input Impedance					
Line Input	10K	ohms	n/a	Nominal	
Speaker/Hi Level Input	5K	ohms	n/a	Nominal	
Filters					0dBr = 1w @ 50Hz
Low Pass (fixed or variable)	Variable				
Low Pass filter (point or range)	60-180	Hz	±2dB	-3dB Point	
Slope	24	dB/Octave	n/a		
Q	1	Damping	n/a		
Subsonic filter (HPF)	25	Hz	±2dB	-3dB Point	
Slope	12	dB/Octave	n/a		
Q	1	Damping	n/a		
AV Boost	YES		—		

Limiter (yes/no)	yes				
THD at Max. Output Power	10	%	functional ck.	Maximum Output Power	Maximum THD as a result of limiting.
Features					
Phase Switch (yes/no)	YES	—	functional ck.		
Volume pot Taper (lin/log)	LOG	—	functional ck.		
Input Configuration		—			
Line In (L,C,R,AC3,Mono)	L,R,C	—	functional ck..	Enabled w/Line/Spkr Input Select Switch	
Line Outputs (L,C,R)	L,R,C	—	functional ck..		Buffered Output / Pre-Volume control
Line-Out Adj. X-over	130-240	Hz	functional ck..	Var-HPF (Pot CCW and CW positions)	Rear panel Variable xover
Spkr/Hi Level In (L,C,R,mono)	L,R,C	—	functional ck..	Enabled w/Line/Spkr Input Select Switch	
Spkr Out: Hi Pass Filter	100	Hz	functional ck..	8 ohm Satellite: 6dB/oct passive xover	Driven from zero ohms source impedance
Signal-Present LED	Yes		n/a		Bi-Color LED (green=signal/ red=no signal)
Signal-Present Input Freq.	100	Hz		Nominal	200uF Series Cap on PCB
Signal-Present Level	2	mV		100Hz into Line Input w/ 1 ch. driven	
Signal-Present Bandwidth	1k	Hz		Signal-Present-LPF for noise immunity	
Signal-Present Turn-on time	0	sec.		Amp connected and AC on, then input signal applied	
Auto Mute/ Turn-OFF Time	15	min.		T before muting, after signal is removed	
Power on Delay time	0.1	sec.	5	AC Power Applied	
Transients/Pops					
Signal-Present Transient	5	mV-peak	n/a	@ Speaker Outputs	
Turn-on Transient	500	mV-peak	2v-pp	@ Speaker Outputs	AC Line cycled from OFF to ON
Turn-off Transient	500	mV-peak	4v-pp	@ Speaker Outputs	AC Line cycled from ON to OFF
Efficiency					
Stand-by Input Power	25	Watts	25	@ nom. line voltage	
Power Cons.@rated power	245	Watts	245	@ nom. line voltage	
Efficiency	102.04%	%	65	Relative to rated output	
Protection					
Short Circuit Protection	yes		functional ck..	Direct short at output	
Line Fuse Rating	2	Amps	2	Type-T or Slo Blo	

PSW-D112/DPS-12 CONTROLS AND THEIR FUNCTION

1. Power LED - Will illuminate when the unit is turned on with the main power switch. This light will be RED when the unit is plugged in and not receiving a signal; when the PSW-D112 receives a signal, the light will cycle to GREEN. If no signal is received after 10 – 15 minutes the light will cycle back to RED (standby) until a signal is present again.

2. Main Power Switch - Main Power Switch to the PSW-D112/DPS-12; turn ON to energize the subwoofer. Under normal operation, Power Switch may be left ON to utilize the Auto ON/OFF feature. For extended periods of non-use, or vacations, it is recommended that the subwoofer's Power Switch be turned OFF.

3. Level Control - The subwoofer Level Control, (PSW-D112, located on the front panel, DPS-12, on the rear panel) adjusts the volume of the subwoofer relative to the rest of the system.

4. Video Contour - The subwoofer Video Contour Control, (PSW-D112, located on the front panel) optimizes the subwoofer's performance for movie listening. When the video-contour switch is "on" the subwoofer's performance is tailored to deliver the impact and excitement of today's movies. The green LED will illuminate when the video-contour switch is on.

5. Speaker In Jacks - Main Input connection to subwoofer when line level, subwoofer, or pre-amp output connectors are not available, or when a high pass filter (set at 150Hz) to main loudspeakers is desired through the Speaker Output Jacks.

6. Speak Out Jacks - Connected to main loudspeakers when the Speaker Input Jacks are used.

7. Phase Switch - Changes the subwoofer's output to be in phase or 180 degrees out of phase with the program material.

8. Line Input - Main Input connection to subwoofer (preferred).

9. Line Output - When using the Line-Level Input jacks, these are connected to an external power amplifier or receiver to power the main loudspeakers with a high pass filter if desired.

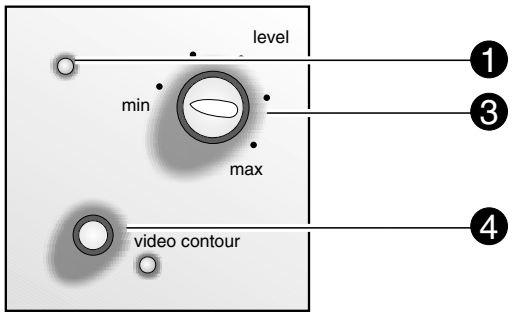
10. Direct In - If you will be connecting the PSW-D112 to a receiver/processor containing a Dolby Digital or DTS surround technology, use this single RCA connection. See the owner's manual for complete instructions.

11. Direct Out - (rev0 version only) This connection allows you to connect more than one PSW-D112 or DPS-12 together; connect this output jack to the Direct Input jack on the second subwoofer.

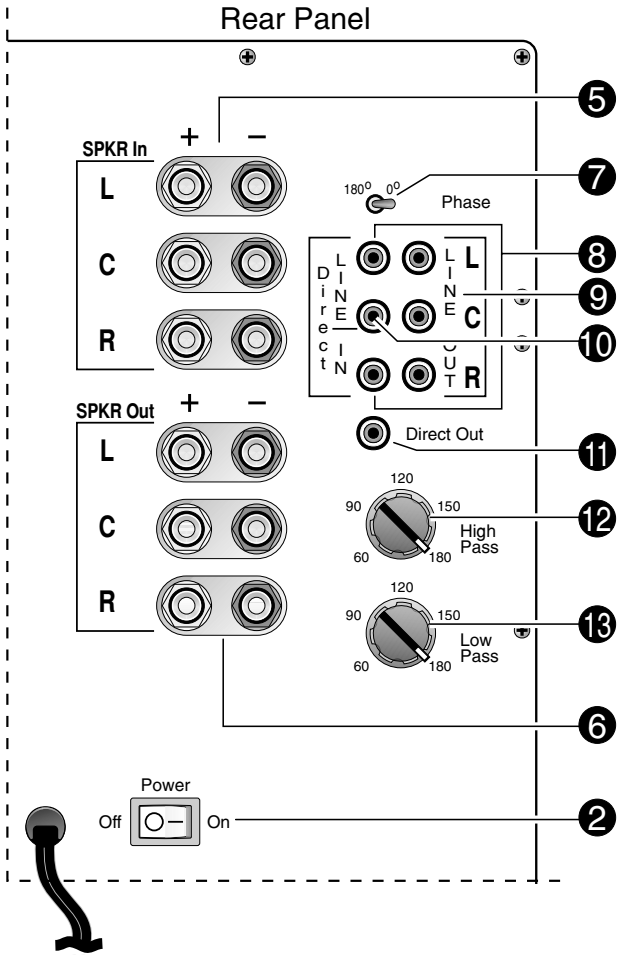
12. High Pass Control - Controls the roll-off point of the lowest frequency produced at the Line Level Output Jacks.

13. Low Pass Control - Controls the roll-off point of the highest frequency the subwoofer will produce.

Front Panel (**PSW-D112** only)



Rev0 version of the **PSW-D112/DPS-12** is shown in this illustration, which has Center channel input and output connectors; **Rev1 version** is missing these, along with the "Direct Out" RCA connector.



OPERATION

Crossover Adjustments

High-Pass Control

If you hooked up your subwoofer as shown in Speaker Connection 4 on page 9. you also have the capability of adjusting the high-pass frequency. The High-Pass control determines the frequency at which the main speaker will start reproducing sounds. If your main speakers can comfortably reproduce some low-frequency sounds, also set this control to a lower frequency setting, between 50Hz – 100Hz. This will concentrate the subwoofer's efforts to the ultradeep bass sounds, while your main speakers continue to reproduce the mid-bass information. If you are using smaller bookshelf speakers that do not extend to the lower bass frequencies, set the high-pass crossover control to a higher setting, between 125Hz – 180Hz. With this setting, your main speakers will not have the burden of reproducing any low-frequency sounds.

If you hooked up your subwoofer as shown in Speaker Connection 1 on page 8, the high-pass frequency is fixed at 150Hz.

If you hooked up your subwoofer as shown in Speaker Connection 2 or 3 on page 8 and 9, no high-pass control adjustment can be made from the subwoofer. Unless you receiver/amplifier incorporates a high-pass crossover, your main speakers will continue to get a full-range signal.

Final adjustment and blending of the low-pass and high-pass controls may evolve over several listening sessions. A good starting point would be to set both the low- and high-pass controls to the same frequency and adjust from that point.

Low-Pass Control

The Low-Pass control determines the highest frequency at which the subwoofer reproduces sounds. If your main speakers can comfortably reproduce some low-frequency sounds, set this control to a lower frequency setting, between 50Hz – 100Hz. This will concentrate the subwoofer's efforts on the ultradeep bass sounds required by today's films and music. If you are using smaller bookshelf speakers that do not extend to the lower bass frequencies, set the low-pass crossover control to a higher setting, between 120Hz – 180Hz.

Phase

Phase Control

The Phase Control determines whether the subwoofer speaker's piston-like action moves in and out with the main speakers, 0 , or opposite the main speakers, 180 . There is no correct or incorrect setting. Proper phase adjustment depends on several variables such as room size, subwoofer placement and listener position. Adjust the phase switch to maximize bass output at the listening position.

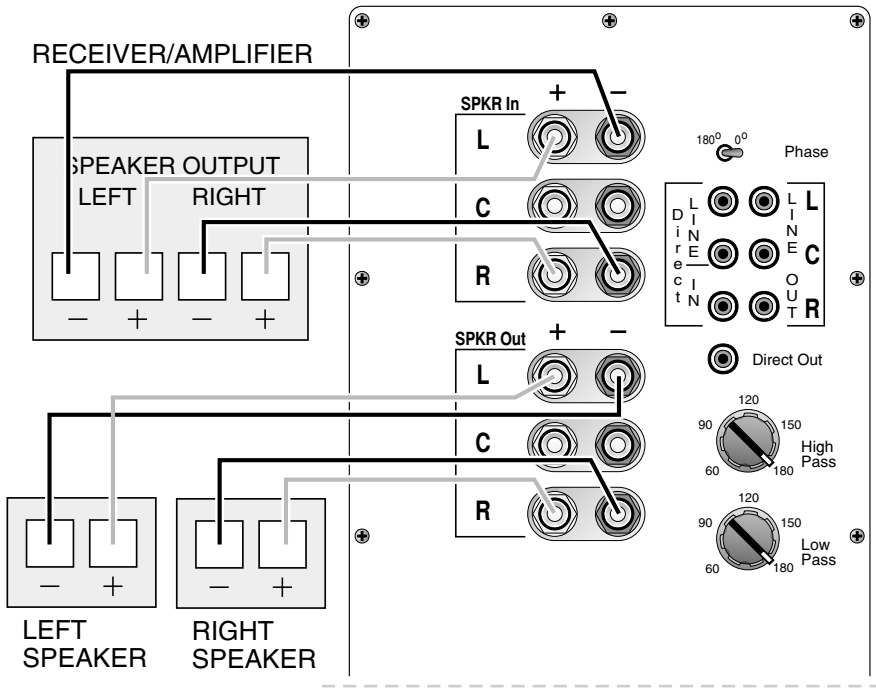
Remember, every system, room and listener is different. There are no right or wrong settings; any setting you choose will result in excellent performance. Should you decide to fine-tune your system for optimum performance, be patient and trust your ears. It will be worth the effort involved to fully "tweak" your system.

SPEAKER CONNECTIONS

NOTE: The rear plate for the PSW-D112 is shown, which has the level control on the front panel. The DPS-12 has this level control on the rear panel (amplifier). In addition, the Rev0 version of the PSW-D112/DPS-12 is shown in these illustrations, which has Center channel input and output connectors; Rev1 version is missing these, along with the "Direct Out" RCA connector.

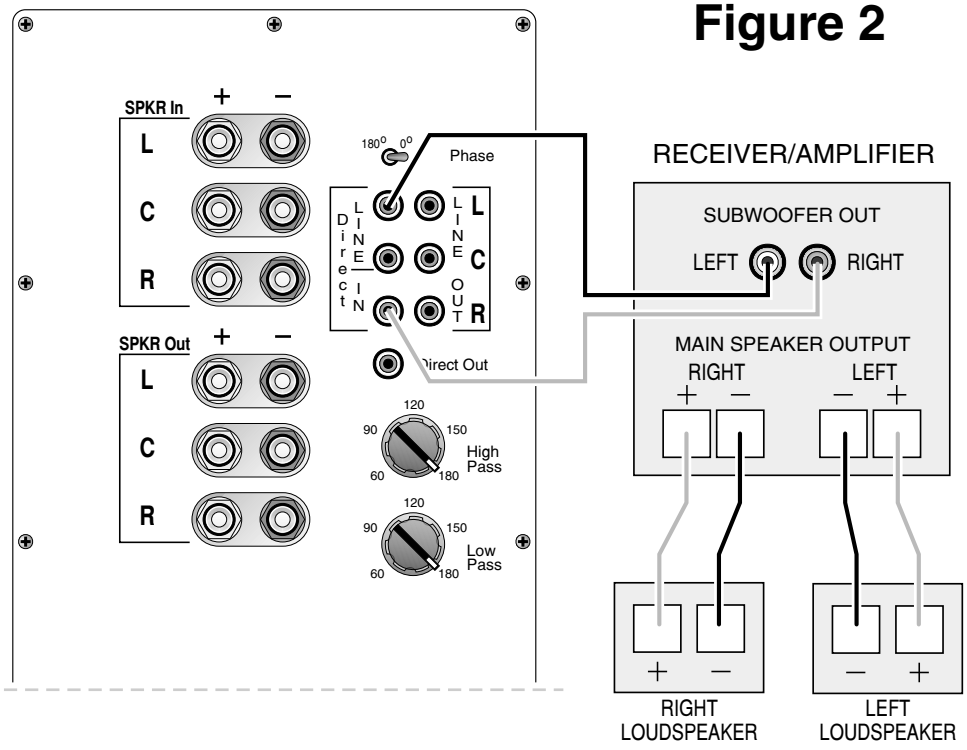
1) If your receiver/amplifier has no subwoofer outputs or preamp outputs for the left, center and right channels. See Figure 1.

Figure 1



2) If your receiver/amplifier has subwoofer outputs or preamp output jacks for the left and right channels. See Figure 2.

Figure 2



3a) If your receiver/amplifier has a single (mono) subwoofer output or LFE output, connect the output using a "Y"-connector (not included) to both Left or Right line-level inputs on the subwoofer. Plug the single male end of the "Y" connector into the receiver/amplifier, and connect the 2 interconnect cables to the Left and Right line-level inputs on the subwoofer.

3b) If you will be connecting the PSW-D112/DPS-12 to a receiver/processor containing a Dolby Digital or D.T.S. surround technology:

1. For the Rev0 version, connect the subwoofer or LFE output from your receiver/processor to the Center. line-level input as shown in Figure 3b.
2. For the Rev1 version, (with no center channel input jack), connect the subwoofer or LFE output from your receiver/processor to EITHER Left or Right line-level input jack with a single RCA cable.
3. Set the "Low-Pass" control to the full clockwise 180Hz setting.

The connection labeled "Direct" (on Rev0 version of the subwoofer) is an output that allows you to connect several subwoofers, if your system contains more than one subwoofer.

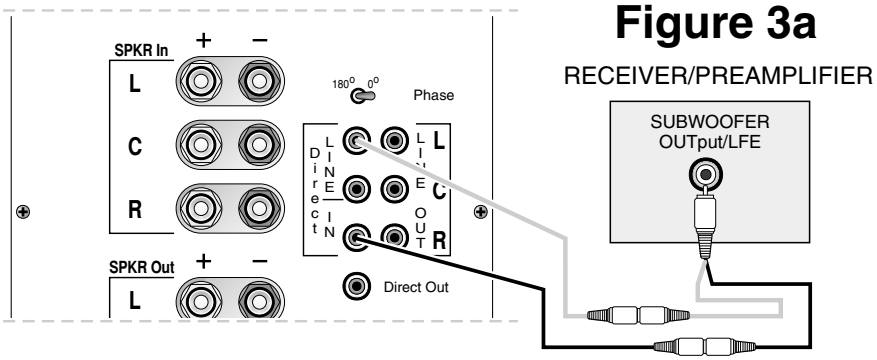


Figure 3a

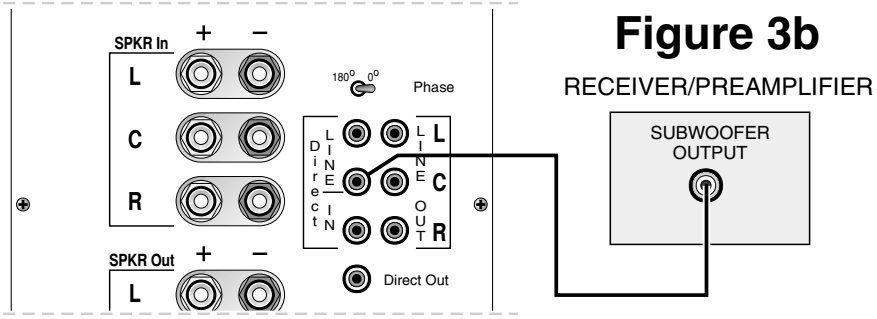


Figure 3b

4) If your receiver/amplifier has preamp output jacks and main input jacks for the left and right channels or you have a separate pre-amp/ processor and power amplifier. See Figure 4.

This method of hookup can offer the highest level of performance for your complete loudspeaker system. The PSW-D112/ DPS-12 incorporates a variable high-pass crossover *in addition* to a variable low-pass crossover. When hooked up as shown above, the subwoofer will limit the low-frequency information that is returned to your receiver/amplifier. Your receiver/ amplifier does not need to waste valuable power reproducing the low frequencies. In addition, since no low-frequency information is being sent to your main loudspeakers, they are able to reproduce mid and high frequencies with greater clarity

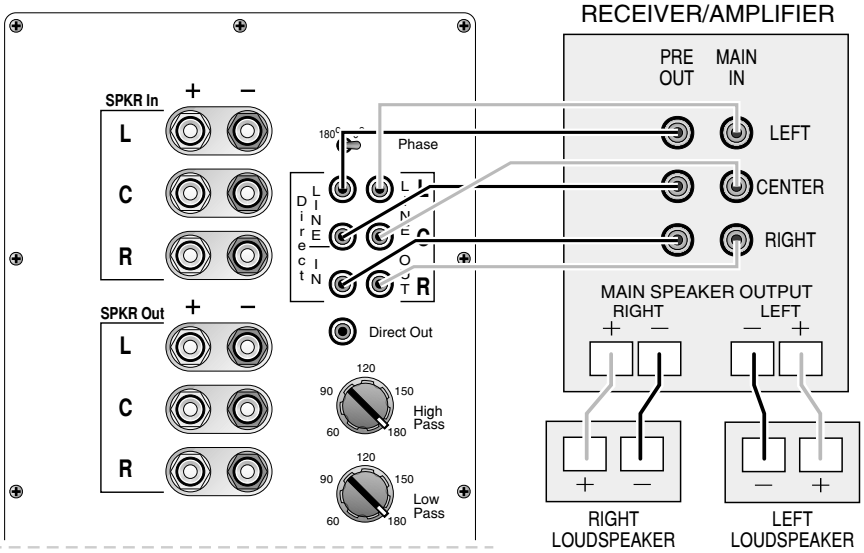


Figure 4

TROUBLESHOOTING

If you used the high-level (speaker) inputs and there is no sound from any of the speakers, check the following:

- Receiver/amplifier is on and a source is playing.
- Powered subwoofer is plugged in.
- Check all wires and connections between receiver/amplifier and speakers. Make sure all wires are connected. Make sure none of the speaker wires are frayed, cut or punctured.
- Review proper operation of your receiver/amplifier.

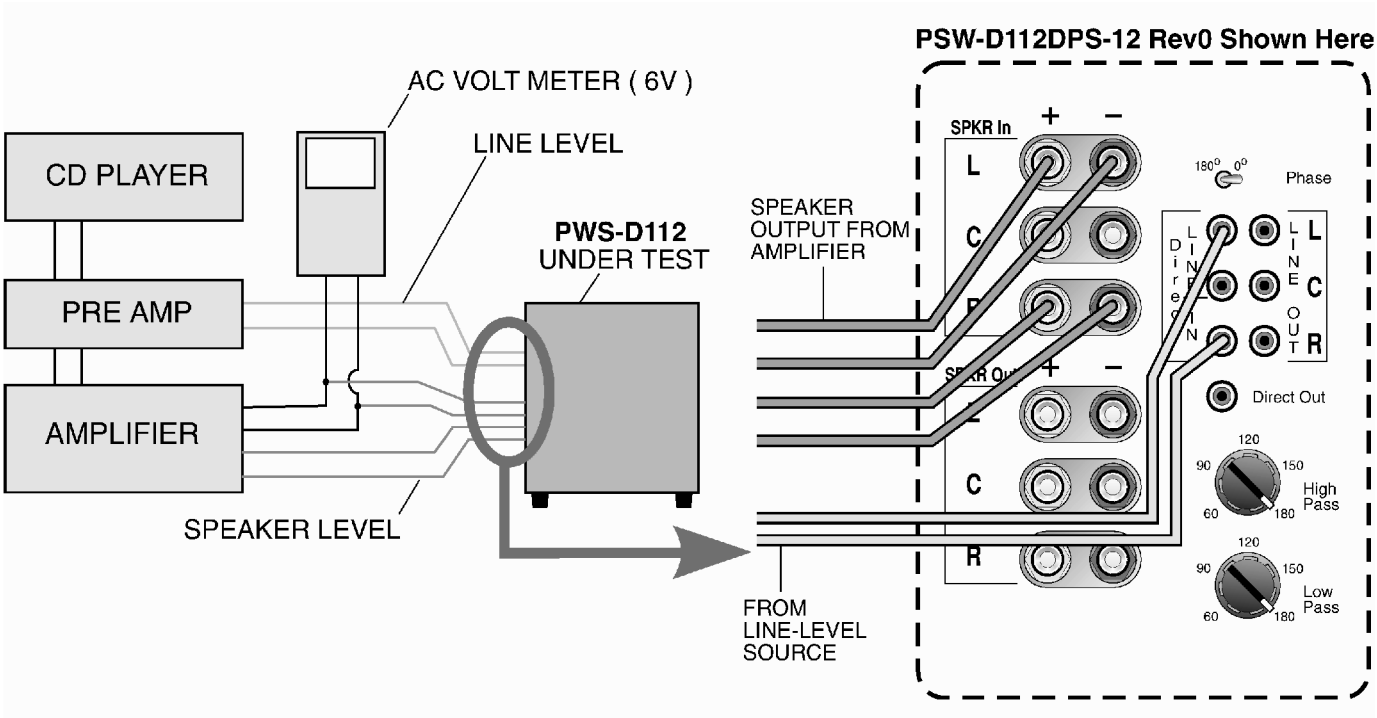
If there is low bass output, check the following:

- Make sure the connections to the left and right "Speaker Inputs" have the correct polarity (+ and –).
- Make sure that the subwoofer is plugged into an active electrical outlet.
- Adjust the crossover point.
- Flip the Phase Control Switch to the opposite position.
- If you are using a Dolby* Digital/DTS® receiver or processor, make sure that the subwoofer adjustments on the receiver/processor are set up correctly.
- Slowly turn the level Control clockwise until you begin to hear the desired amount of bass.

If you used the line-level inputs and there is no sound from the subwoofer, check the following:

- Receiver/amplifier is on and a source is playing.
- Powered subwoofer is plugged in.
- Check all wires and connections between receiver/amplifier and subwoofer. Make sure all wires are connected. Make sure none of the wires are frayed, cut or punctured.
- Review proper operation of your receiver/amplifier.
- Slowly turn the level Control clockwise until you begin to hear the desired amount of bass.
- Make sure that you have configured your receiver/processor so that the subwoofer/LFE output is on.

PSW-D112/DPS-12 TEST SET UP AND PROCEDURE



General Function

UUT = Unit Under Test

1. Connect both right and left line level inputs (RCA) to signal generator and UUT. Use Y-cable if necessary from mono source. VOLUME control should be full counterclockwise.
2. Turn on generator, adjust to **50mV, 50 Hz.**
3. Plug in UUT; red LED should be ON. Turn VOLUME control full clockwise. Low Pass control should be set fully clockwise (180).
4. LED should turn Green; immediate bass response should be heard and felt from port tube opening.
5. Turn off generator, turn VOLUME control fully counterclockwise, disconnect RCA cables.
6. Connect one pair of speaker cables to either high level input terminal on UUT. Cables should be connected to an integrated amplifier fed by the signal generator.
7. Turn on generator and adjust so that speaker level output is **2.0V, 50 Hz.** Turn VOLUME control full clockwise.
8. Green LED should light, immediate bass response should be heard and felt from the port tube opening.

Sweep Function

1. Follow steps 1-4 above, using a sweep generator as a signal source.
2. Sweep generator from 20Hz to 300Hz. Listen to the cabinet and drivers for any rattles, clicks, buzzes or any other noises. If any unusual noises are heard, remove driver and test.

Driver Function

1. Remove driver from cabinet; detach + and - wire clips.
2. Check DC resistance of driver; it should be **6.1 ohms**.
3. Connect a pair of speaker cables to driver terminals. Cables should be connected to an integrated amplifier fed by a signal generator and adjust so that speaker level output is **5.0V.**
4. Sweep generator from 20Hz to 1kHz. Listen to driver for any rubbing, buzzing, or other unusual noises.

NOTE: When testing the PSW-D112/DPS-12 amplifier, a load must always be connected to the output terminals, whether the woofer, or a 4 to 8 ohm resistive load.

PSW-D112/DPS-12 TESTING PROCEDURE (REV0 ONLY)

A. Power Amp Section

1. Resistance Check
Resistance from O/P of the module to GND should be >1M (NO LOAD)
Resistance from V+ of the module to V- of the module should read >5k
Resistance from V+ of the module to O/P of the module should read >1M
Resistance from V- of the module to O/P of the module should read >1M

2. Power Up LED RED

- With a 35mV signal to Low level input, LED should change to GREEN

3. D.C. Operation

-Voltage measurements (DVM)

Between	+6V	V+	O/P	V-	+15V	S/D	FR	I/P	GND	-15V
And	V-	GND	GND	GND	GND	V-	GND	GND	GND	GND
Should be Reading	+6.2V	+90.1V	0V	-90.1V	+15.5V	+5.75V	0V	0V	0V	-15.5V

4. Check Switching Frequency

-Use scope (EITHER USES AN ISOLATION TRANSFORMER OR ATTACHES THE PROBE TIP TO SPK- and REFERENCE LEAD TO SPK+)

-Reading 100kHz +/-10%,500mVpp

B. Pre Amp Section

1. Low Level Input Sensitivity
-Set up Turn level and Low-Pass Pot Fully CW
Generator set at 100mV@39Hz
Signal to Low level input

-Voltage measurements

OP AMP								SPEAKER OUTPUT
U1(14)	U1(7)	U1(1)	U2(8)	U2(14)	U2(1)	U4(1)	U4(7)	
271mV	409mV	486mV	471mV	456mV	460mV	2.94V	2.67V	17.4V

2. High Level Input Sensitivity

-Set up Turn level and Lo Pass Pot Fully CW
Set Generator at 3.6V@39Hz
Signal to High level input

-Voltage measurements 17.4V at speaker output

3. Low-Pass

-Set up Set Generator at 100mV@100Hz
Signal to Low level input
Measure voltage at speaker output

-Voltage measurement

Low-Pass Pot Setting	Output
CW	12.2V
CCW	1.2V

4. High-Pass

-Set up Set Generator at 100mV@100Hz
Signal to Low level input
Measure voltage at high-pass output

-Voltage measurement

High-Pass Pot Setting	Output
CW	24mV
CCW	55mV

5. Direct out

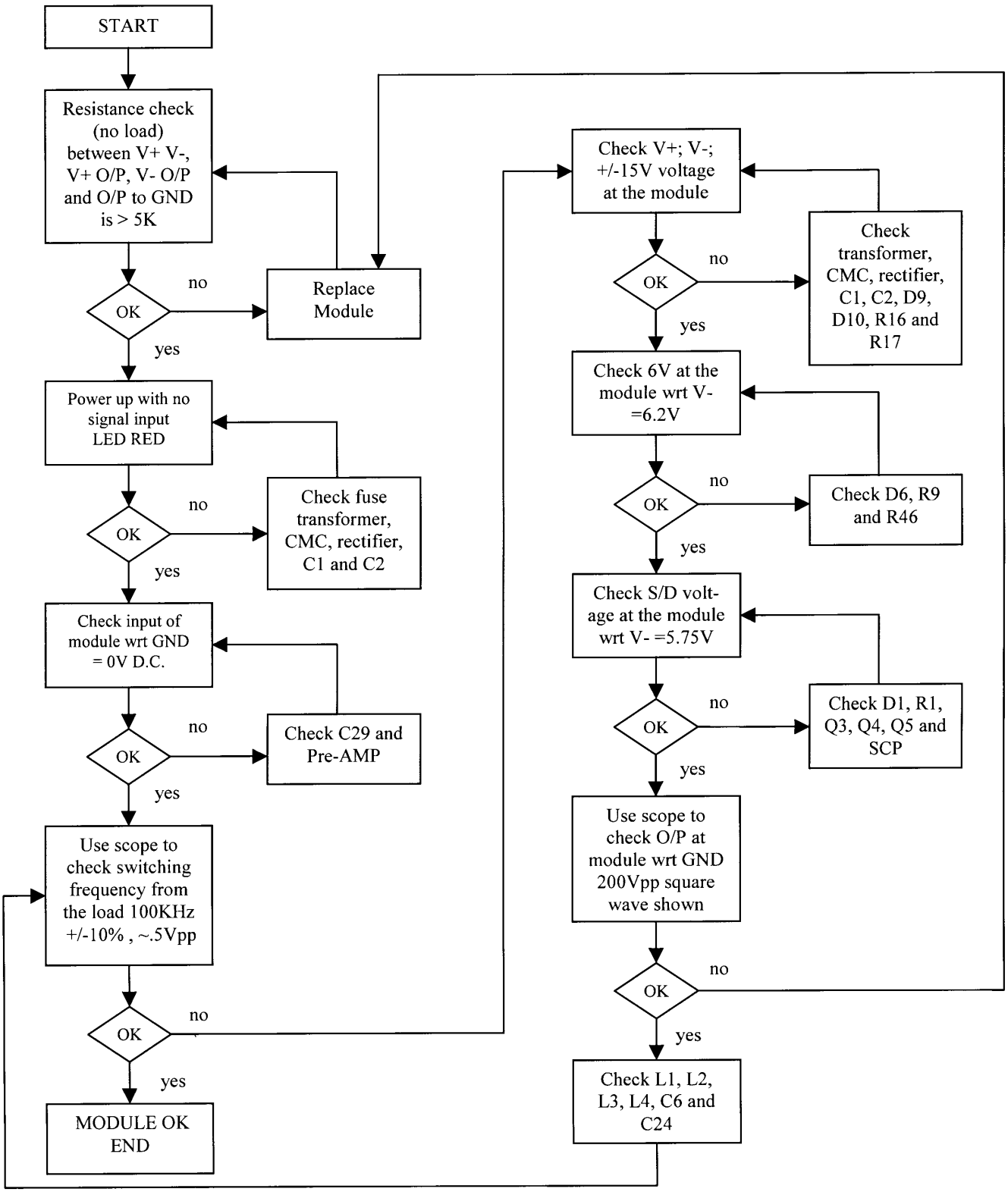
-Set up Set Generator at 100mV@100Hz
Signal to Low level input

-Voltage measurement 100mV at direct out

See flow chart next page for diagnostics.

PSW-D112/DPS-12 POWER AMP MODULE TESTING FLOW CHART (REV0 ONLY)

CAUTION: MODULE OUTPUT IS FLOATING AND IS ***NOT*** PROTECTED AGAINST A SHORT TO GROUND. ALL TEST INSTRUMENTS CONNECTED TO THE OUTPUT ***MUST*** BE FLOATING. ATTACH THE SCOPE PROBE TIP TO SPK - and REFERENCE LEAD TO SPK+.



Service Bulletin

Service Bulletin JBL9903 Rev1 - February 2001 | This is considered a Minor repair

To: All JBL Service Centers

Models: PSW-D110, PSW-D112**,** ARC SUB 8, ARC SUB 10

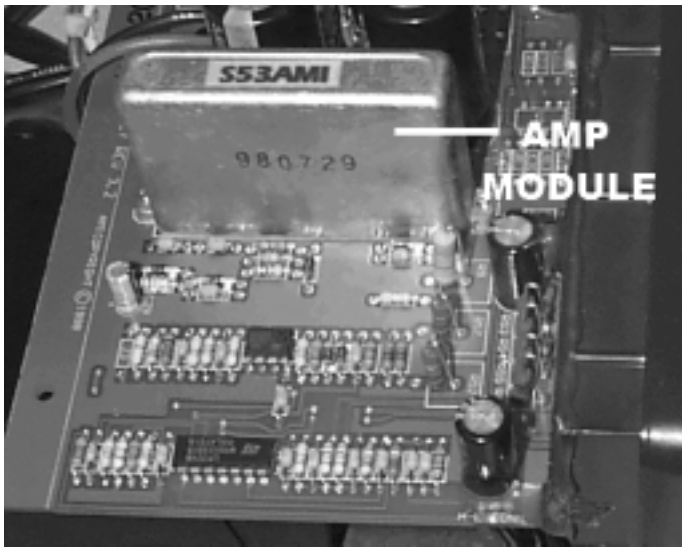
Subject: Check Solder Joints in Event of Failure

Some performance related complaints in the PSW-D110, PSW-D112, ARC SUB 8 or ARC SUB 10 powered Subwoofers may be caused by cold solder connections between the 28 pins of the Power Amp Module and the main circuit board. When troubleshooting, failure to check these joints can result in erroneous conclusions or wasted time.

In the event you receive a PSW-D110, PSW-D112, ARC SUB 8 or ARC SUB 10 Subwoofer with the complaints "Dead, or No Output, or Motorboating (Oscillation)", perform the steps listed below *first* before any further troubleshooting takes place:

1) Unplug all cables, lay the subwoofer on a padded surface.
2) Remove all Philips screws around the outer perimeter of the amplifier faceplate.
3) Remove amplifier assembly; you should be able to remove the amplifier far enough out of the cabinet to service it without removing the woofer wires.
4) Locate the Power Amp Module; it is the large gray component with a metal case. On the solder side of the circuit board are the 28 soldered connections to the Module.
5) *Regardless of whether you can visibly see breaks in any of the connections or not*, carefully re-solder all 28 pin connections, adding 60/40 rosin core solder. Take care not "bridge" any connections on the board with solder.
6) Inspect the solder joints to the main filter capacitors C1 and C2 on the main PCB and re-solder if needed.
7) Replace the amplifier assembly back into the cabinet; replace the screws.
8) Test the unit by applying a signal from a music source, adjust the volume to a moderate level and confirm the original problem has been corrected.

IMPORTANT SERVICE NOTES: When testing the PSW-D, or ARC Series amplifier, a load must always be connected to the output terminals, whether the woofer, or a 4 to 8 ohm resistive load.
All AC powered test instruments (meters, oscilloscopes, etc.) must have a floating ground, i.e. be connected to an isolation transformer.



Service Bulletin

Service Bulletin JBL2001-02 - February 2001 | This is considered a Minor repair

To: All JBL Service Centers

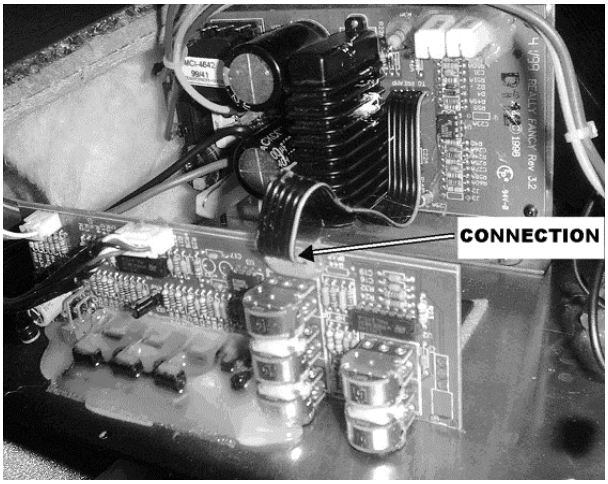
Models: PSW-D112 rev0*, DPS-12, PSW-D115

Subject: Check Ribbon Cable Connection In Event Of Failure

Some performance related complaints in the PSW-D or DPS Series powered Subwoofers may be caused by broken or cold solder connections in the ribbon cable connector between the premamp and main PCB. When this condition occurs, it may also damage the Input Op-Amps U1/U2.
When troubleshooting, failure to check this connector and Input Op-Amps U1/U2 can result in erroneous conclusions or wasted time.

In the event you receive a PSW-D112*, DPS-12, or PSW-D115 Subwoofer with any of the complaints "Dead, or No Output, or Motorboating (Oscillation)", perform the steps listed below before any further troubleshooting takes place:

1) Unplug all cables, lay the subwoofer on a padded surface.
2) Remove all Philips screws around the outer perimeter of the amplifier faceplate.
3) Remove amplifier assembly; you should be able to remove the amplifier far enough out of the cabinet to service it without removing other connecting wires.
4) Locate the ribbon cable connector between the premamp PCB and the main PCB. See illustration.
5) Desolder the connection on that cable where the cable attaches to the premamp PCB; to access, you may have to carefully remove or scrape adhesive from this area.
6) Cut approximately ½" of ribbon from the cable end, then strip enough of the insulator on each of the six conductors to allow re-connection. Take care not to damage the wire. Solder the cable end back onto the premamp PCB.
7) Test the unit by applying a signal from a music source, adjust the volume to a moderate level and confirm the original problem has been corrected.
8) If not, troubleshoot Op-Amps U1 and U2 by standard methods; replace if defective:
   Make sure plus/minus voltages are present on pins 4 and 11.
   Make sure DC voltages are not present at output pins 1,7,8,14. (See schematic)
   Apply a signal and confirm there is an output on pins 1,7,8,14. (See schematic)
9) Replace the amplifier assembly back into the cabinet; replace the screws.



IMPORTANT SERVICE NOTES: When testing the PSW-D or DPS Series amplifier, a load must always be connected to the output terminals, whether the woofer, or a 4 to 8 ohm resistive load. All AC powered test instruments (meters, oscilloscopes, etc.) must have a floating ground, i.e. be connected to an isolation transformer.

* Rev 0 of the PSW-D112 subwoofer is easily identified by the presence of Center channel Input and Output connectors

TECH TIPS

Troubleshooting tips and solutions to common service problems

For models: **PSWD112 Rev1 only ***
PSWD115

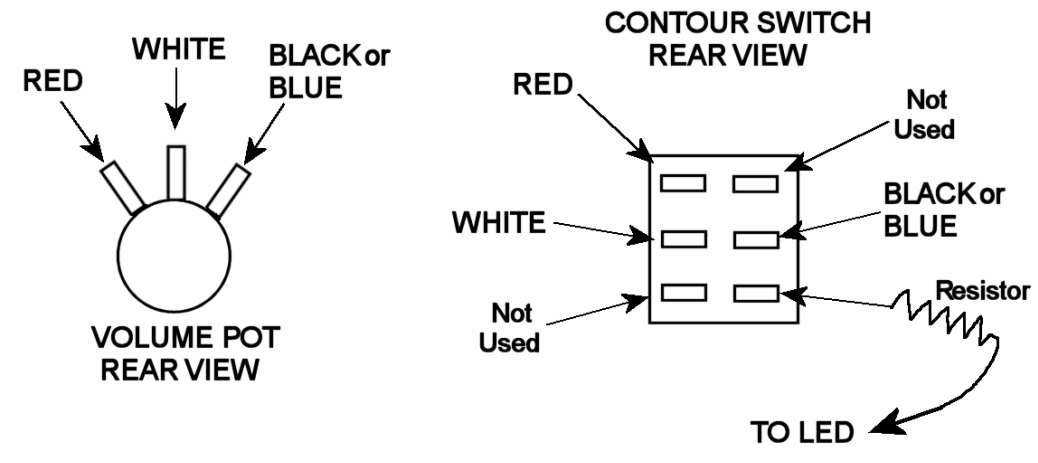
TIP# JBLTT2004-02

Subject: PSWD112/115 WIRING TO REMOTE VOLUME/CONTOUR/LED CONTROL PLATE

A total of 9 wires travel from two Molex connectors on amplifier PCB to 334344-001 Control plate.
That control panel is attached by two screws on the inside of the cabinet; the woofer must be removed. The wire cluster is glued into the cabinet opening at the rear of the control panel. The hot melt glue has to be cut out and pried out, then the wire cluster should be re-glued after the control panel is serviced, for air integrity.

1) Two Black sheathed cables, each containing wire colors:
   Black **or** Blue
   White
   Red
2) Three separate wires:
   Red
   White
   Gray

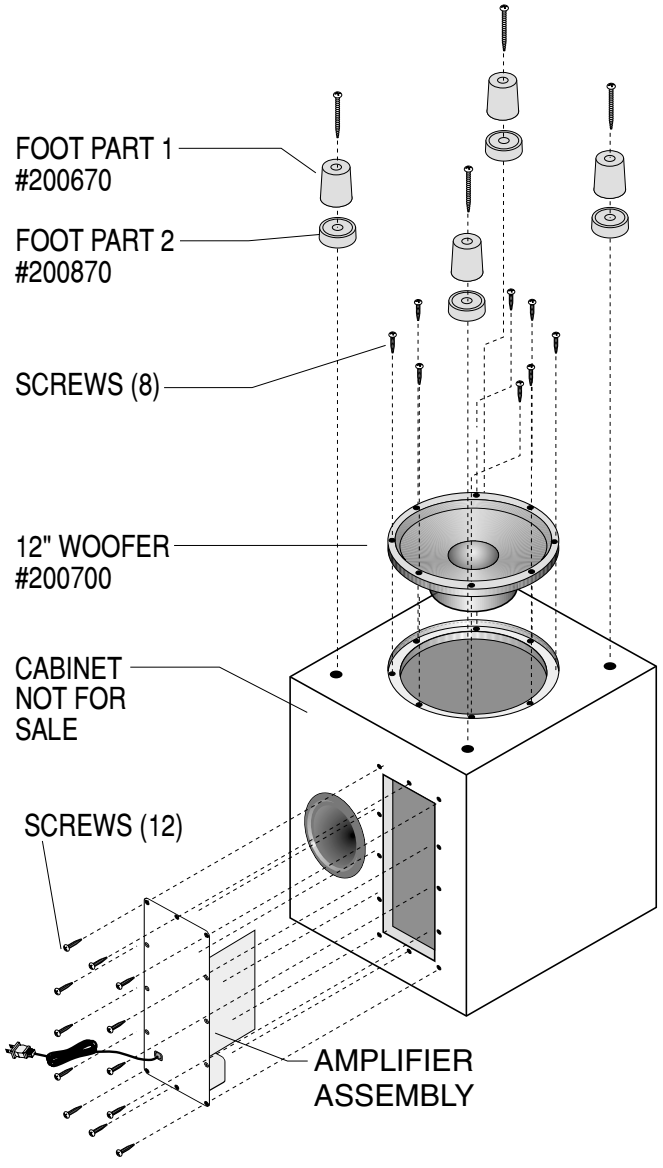
At the Control Plate:
Volume pot: Black **or** Blue, White, Red
Contour Switch: Black **or** Blue, White, Red
Power LED: Gray, Red
Contour LED: White, Black w/ 10k resistor



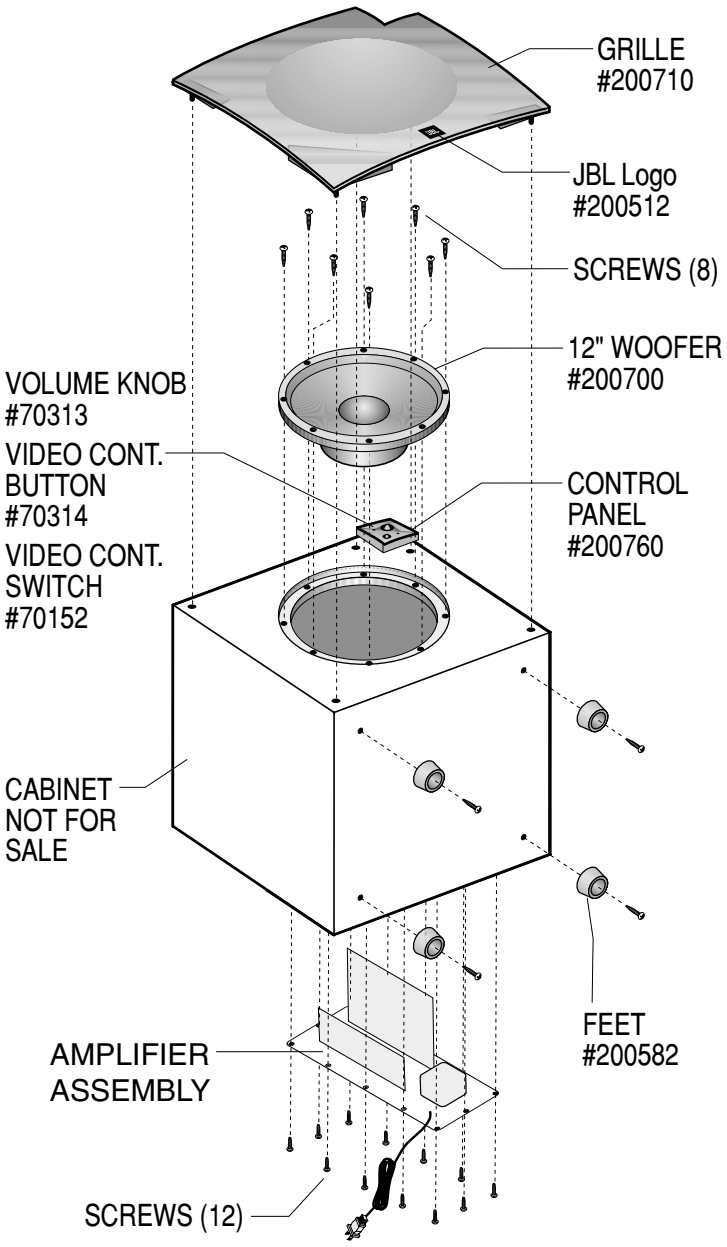
* Rev1 version of the PSW-D112 subwoofer is easily identified by the absence of Center channel Input and Output connectors, and is missing the“Direct Out” RCA connector.

CABINET EXPLODED VIEWS

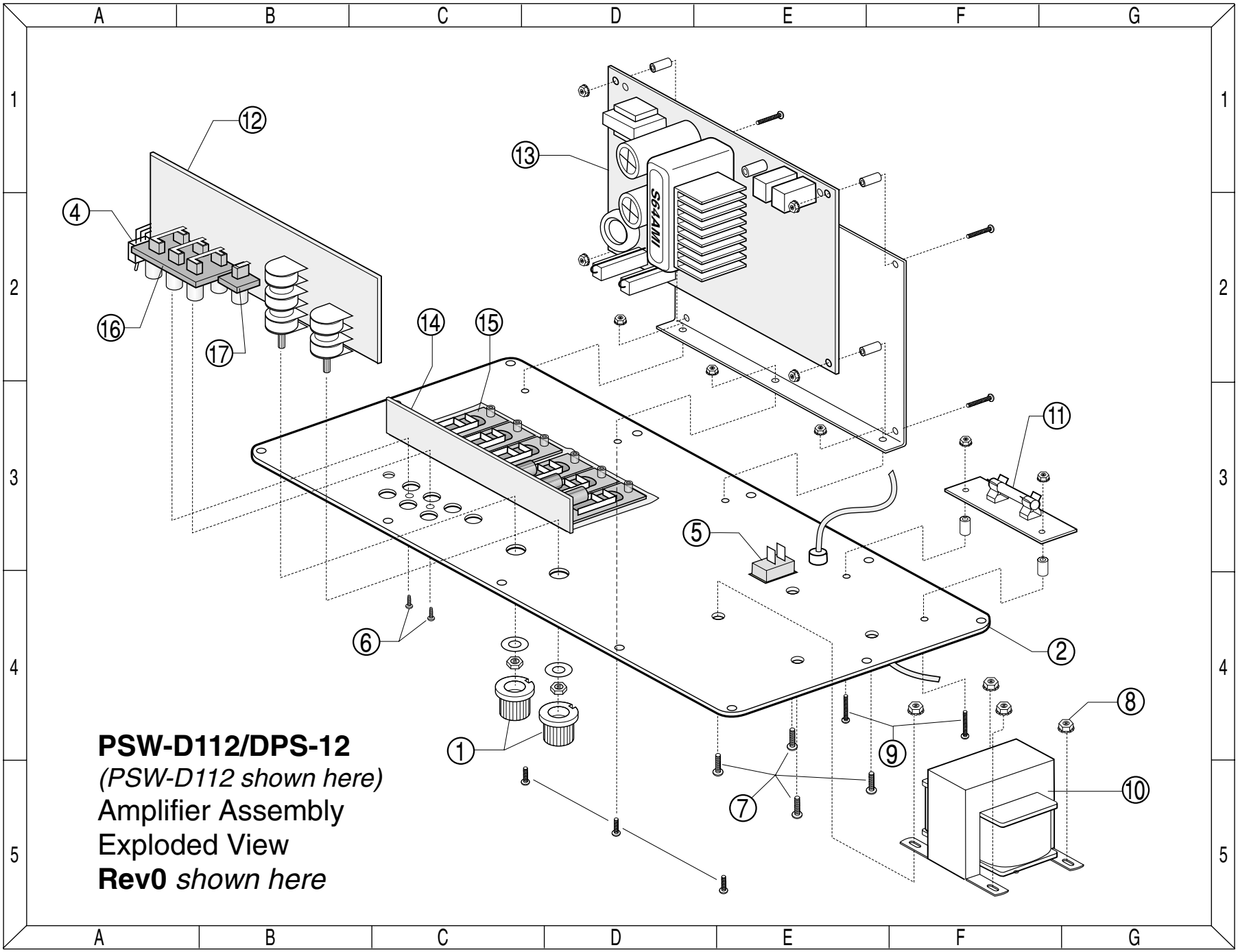
DPS-12
CABINET ASSEMBLY



PSW-D112
CABINET ASSEMBLY



AMPLIFIER EXPLODED VIEW



PSW-D112/DPS-12
(PSW-D112 shown here)
Amplifier Assembly
Exploded View
Rev0 *shown here*

PSW-D112/DPS-12 MECHANICAL PARTS LIST

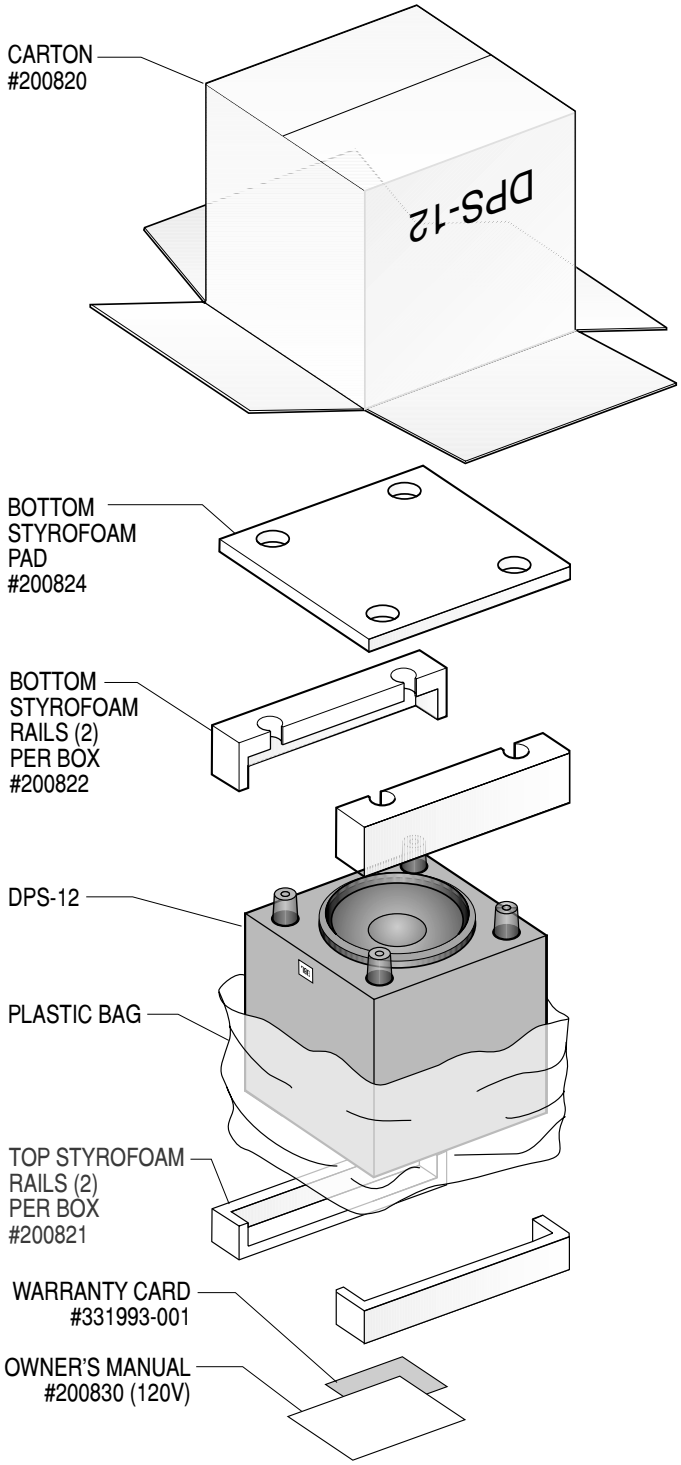
Ref. #	Part Number	Description	Qty

PSW-D112/DPS-12

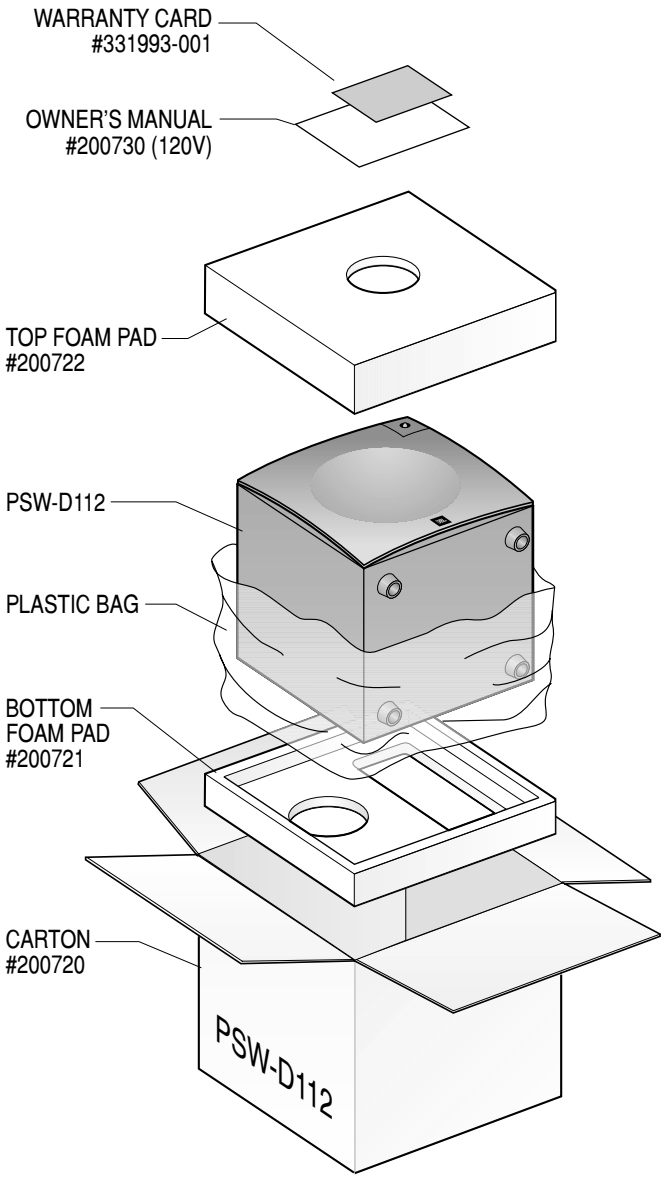
1	70302	Knob, 3 pcs on DPS-12, 2 pcs on PSW-D112	
2	70312	Faceplate PSW-D112	
2	70311	Faceplate DPS-12	
3	70316	Amp PCB support	
4	70150	Phase switch (also DPS-12 Video Contour switch)	1
5	70151 ⚠	Power switch Safety part	
6	70170	#4x0.5" Screws to secure input jack	
7	70171	#10 x 1" Screw machine screw Bolts for transformer 4 per unit	
8	70172	#10 keps Nuts for transformer 4 per unit	4
9	70173	#6 x 0.5" Screws for fuse PCB 2per unit	2
10	80116 ⚠	Transformer #4632 Safety part	1
11	80117 ⚠	250V, 2.0A, T type SLO BLO fuse Safety part	
12	80118 ⚠	Preamp board, D112,D115,DPS12 Safety part	
13	80119 ⚠	Power amp board D112, D115,DPS12 Safety part	
14	80120 ⚠	High level input PCB D112,D115,DPS12 Safety part	
15	108116	High level 5way binding post(pr)	(4) or (6)
16	108322	Six line RCA input jack (Rev0)	1
	108321	Quad RCA input jack (Rev1)	1
17	108323	Single RCA input jack (Rev0 version only)	1

PACKING EXPLODED VIEWS

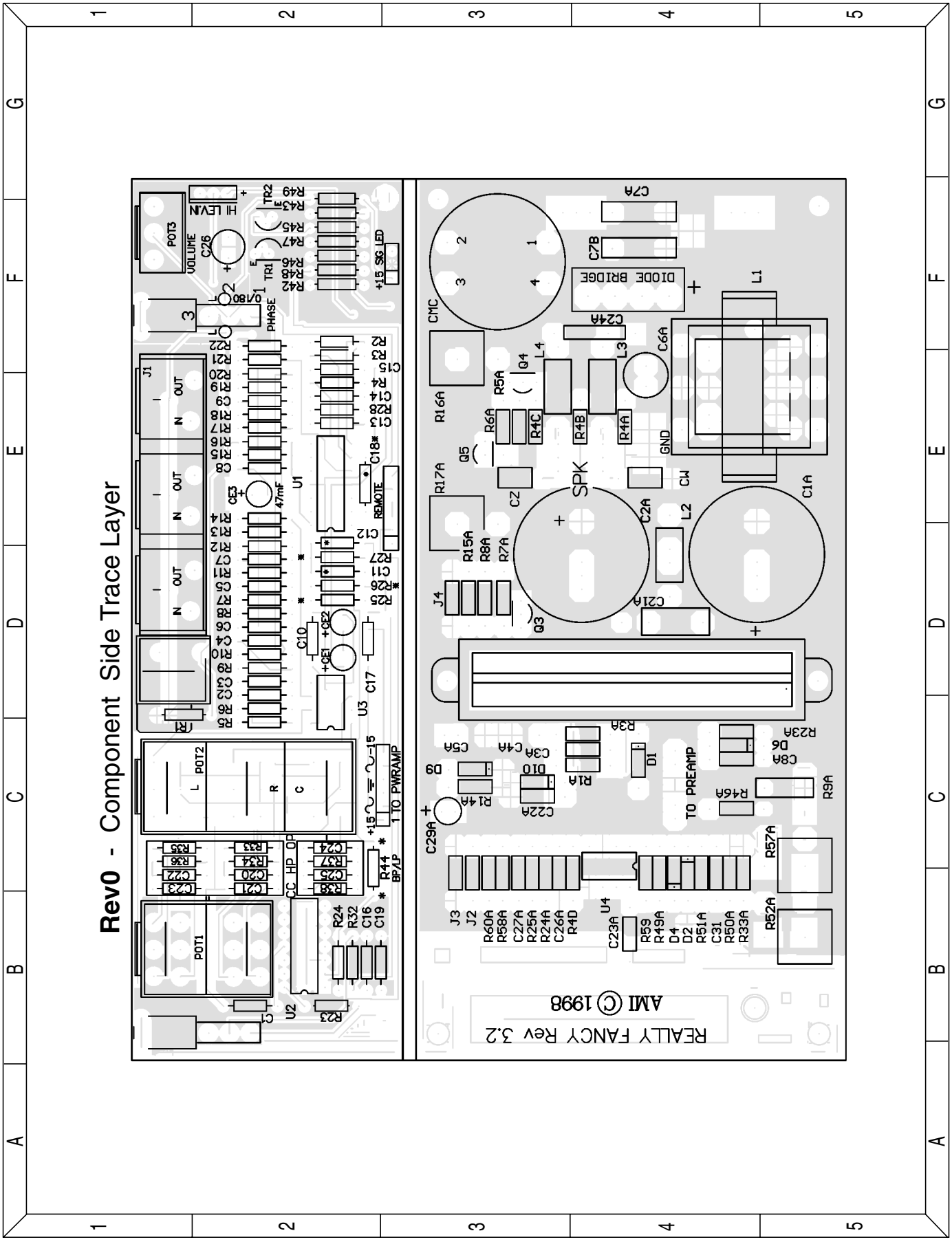
DPS-12



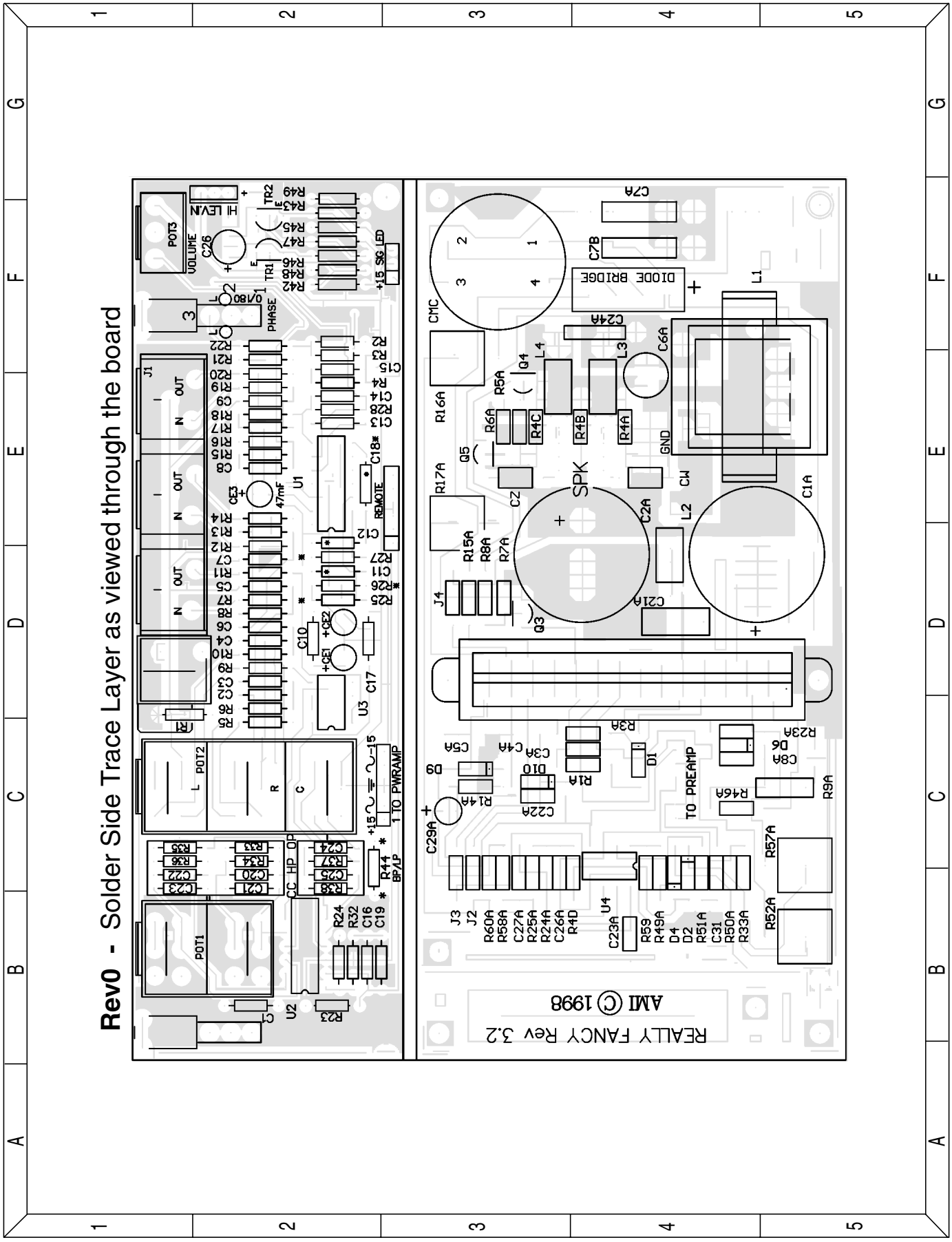
PSW-D112



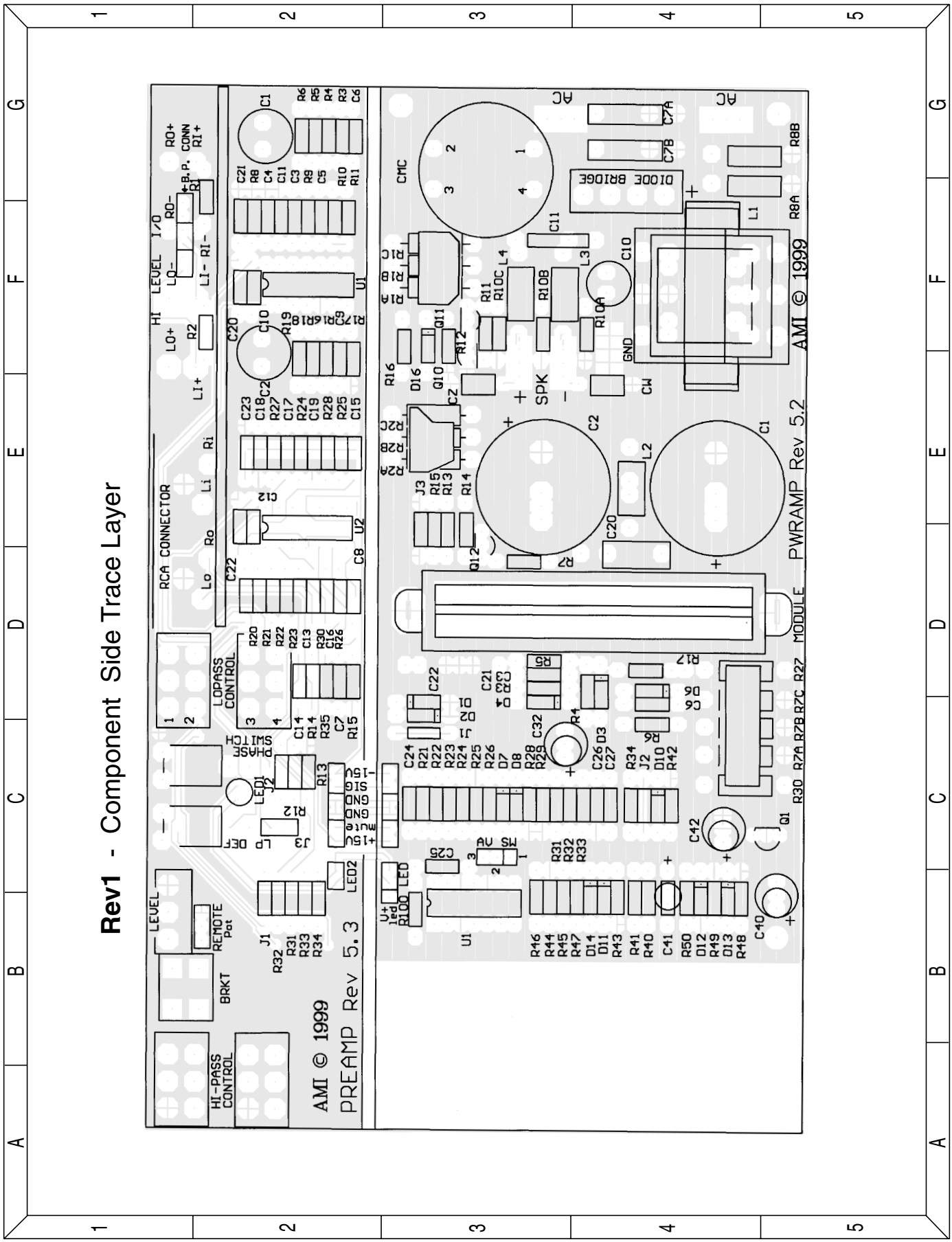
PSW-D112/DPS-12 Rev0 PCB (Component Side)



PSW-D112/DPS-12 Rev0 PCB (Solder Side)

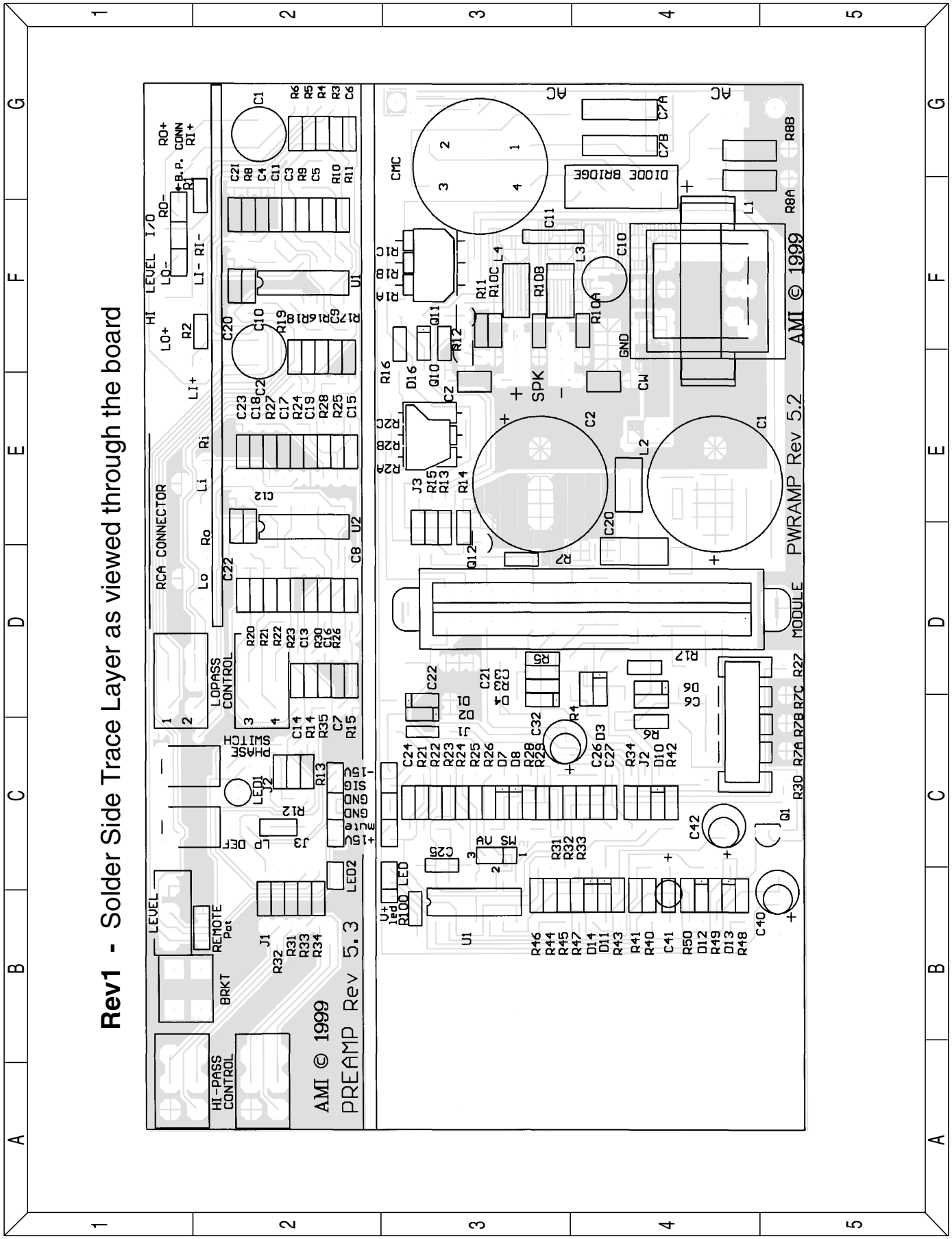


PSW-D112/DPS-12 PCB (Component Side) PREAMP Rev1, PWRAMP Rev1



PSW-D112/DPS-12 PCB (Solder Side) PREAMP Rev1, PWRAMP Rev1

Rev1 - Solder Side Trace Layer as viewed through the board



PSW-D112/DPS-12 ELECTRICAL PARTS LIST (Rev0)

Preamp Board

Ref. #	Part Number	Description	Qty
Low Pass	40436	20k 0.25W 10% Quad Lin Pot	1
Level	40402	5k 0.25W 10% Single Linear Pot	1
High pass	40450	20k 0.25W 10% 3-gang Tandem Lin Pot	1
Capacitors			
Safety C1	30502	100nF 50V 20% Mono-ceramic axial	1
C2, C3	30501	47nF 50V 20% Mono-ceramic axial	2
CE3	30708	47uF 16V 20% Electrolytic Radial	1
C4	30501	47nF 50V 20% Mono-ceramic axial	1
C5	30100	330pF 50V 20% Mono-ceramic axial	1
C6, 24, 25	30501	47nF 50V 20% Mono-ceramic axial	3
C7, 9	30100	330pF 50V 20% Mono-ceramic axial	2
C8	30101	220pF 50V 20% Mono-ceramic axial	1
C10	30502	100nF 50V 20% Mono-ceramic axial	1
C11, 12	30517	68nF 50V 10% Mono-ceramic axial	2
C13, 14, 15	30101	220pF 50V 20% Mono-ceramic axial	3
C16	30504	100nF 50V 10% Mono-ceramic axial	1
C17	30502	100nF 50V 20% Mono-ceramic axial	1
C18		Jumper	
C19	30508	10nF 50V 10% Mono-ceramic axial	1
C20, 21, 22, 23	30504	100nF 50V 10% Mono-ceramic axial	4
Resistors			
R1	40405	4.7k 0.25W 5% carbon film	1
R2	40431	68k 0.25W 1% metal film	1
R3	40451	137k 0.25W 1% metal film	1
R4	40452	2.7k 0.25W 5% carbon film	1
R5, 6	40438	20k 0.25W 1% metal film	2
R7	40108	620 0.25W 5% carbon film	1
R8	40453	20k 0.25W 5% carbon film	1
R9, 10, 13	40438	20k 0.25W 1% metal film	3
R11, 12, 14	40108	620 0.25W 5% carbon film	3
R15	40732	56.2k 0.25W 1% metal film	1
R16	40743	7.5k 0.25W 5% carbon film	1
R17, 18	40453	20k 0.25W 5% carbon film	2
R19, 20	40108	620 0.25W 5% carbon film	2
R21	40412	33.2k 0.25W 1% metal film	1
R22	40454	45.3k 0.25W 1% metal film	1
R23	40405	4.7k 0.25W 1% metal film	1
R24	40408	8.45k 0.25W 1% metal film	1
R25	40455	169k 0.25W 1% metal film	1
R27	40434	38.3k 0.25W 1% metal film	1
R28	40456	2.7k 0.25W 5% carbon film	1
R32	40403	10k 0.25W 1% metal film	1
R33, 34, 35, 36, 49	40440	6.8k 0.25W 5% carbon film	5
R37, 38	40438	20k 0.25W 1% metal film	2
R42	40457	200k 0.25W 5% carbon film	1
R43		Jumper	
R45	40449	3.3k 0.25W 5% carbon film	1
R46, 47	40415	470k 0.25W 5% carbon film	2
R48	40742	4.99k 0.25W 1% metal film	1
Diodes			
Signal LED	50109	Bi-colour ⚠	1
Video LED	50110	Green	1
Transistors			
TR1	60154	MPS A56 80V PNP	1
TR2	60151	MPS A13 40V NPN(Darl) ⚠	1
Integrated Circuit			
U1 ⚠, U2	60100	LM324 Dual OpAmp +/-15V	2
U3	60101	TLO 82 Dual OpAmp +/-15V	1

NOTE: Power Amp PCB may have an "A" following the parts designators - ignore it; list below is still valid

Poweramp Board

Capacitors			
C1 ⚠, C2	30710	2200uF 100V 80/-20% Electrolytic radial	2
C3 ⚠, C4, C5	30505	100nF 50V 20% mono-ceramic axial	3
C4, 5	30505	100nF 50V 20% mono-ceramic axial	2
C6	30709	4.7uF 100V 80/-20% Electrolytic radial NP	1
C7a/b	30521	100nF 250V 20% Metal Polyester Rad ⚠	2
C8	30502	100nF 50V 20% mono-ceramic axial	1
C21	30522	100nF 250V 20% mono-ceramic axil	1
C24	30523	330nF 100V 80/-20% mono-ceramic axial	1
C26	30508	10nF 50V 10% mono-ceramic axial	1
C27	30513	3.3nF 50V 10% mono-ceramic axial	1
C29	30711	22uF 35V 80/-20% Electrolytic radial	1
C31	30511	330nF 50V 20% mono-ceramic axial	1
CW, CZ	30505	100nF 100V 20% mono-ceramic axial	2
Diodes			
D1	50114	1N5265B 62V 5% .5W Zener	1
D2, 4	50104	1N4148 100V .1A	2
D6	50103	1N5234B 6.2V 5% .5W Zener	1
D9, D10	50105	1N4744A 15V 5% 1W Zener	2
DBR	50100	Bridge Rect 200V 4A ⚠	1
Semiconductors			
Q3	60153	2N3904 40V NPN	1
Q4, Q5	60155	2N5401 PNP	2
U4	60101	TL082 Dual Op Amp	1
S64AMI	60302	Power Amp module SAFETY PART ⚠	1

Ref.#	PartNumber	Description	Qty
Resistors			
R1	40706	10M 0.25W 5% carbon film ⚠	1
R3	40458	43.2k 0.25W 1% metal film	1
R4	40417	47k 0.25W 5% carbon film	1
R4a/b/c	40105	0.1 0.5W 5% metal film	3
R5, 6	40420	1k 0.25W 5% carbon film ⚠	2
R7	40449	3.3k 0.25W 5% carbon film	1
R8, 25	40417	47k 0.25W 5% carbon film	2
R9	40744	3.3k 5W 5% ceramic wirewound	1
R14	40409	10k 0.25W 5% carbon film ⚠	1
R15	40459	100k 0.5W 5% carbon film	1
R16, 17	40745	1.8k 7W 5% ceramic wirewound ⚠	2
R23	40461	20k 0.5W 5% carbon film ⚠	1
R24	40418	22k 0.25W 5% carbon film	1
R33, 50	40100	332 0.5W 5% carbon film	2
R46	40111	47 ohms 0.25W 5% carbon film ⚠	1
R49	40746	316k 0.25W 1% metal film	1
R51	40417	47k 0.25W 5% carbon film ⚠	1
R52, R57 ⚠	40462	2.7k 5W 5% ceramic wirewound	2
R58, 59	40405	4.7k 0.25W 5% carbon film ⚠	2
R60	40431	68k 0.25W 5% carbon film	1
R61	40463	3.9k 3W 5% ceramic wirewound ⚠	1
SafetyInductors			
CMC1	80100	mc4438	1
L1	80121	mc4642 ⚠	1
"L2,L3,L4"	80122	Ferrite Bead ⚠	3

High Level Input/Output Board

Capacitors			
C1	30704	220uF 50V 20% Electrolytic Radial	1
C2	30704	220uF 50V 20% Electrolytic Radial	1
C3	30704	220uF 50V 20% Electrolytic Radial	1
Resistors			
R1 L, R3 L, R1 C, R3 C, R1 R, R3 R	40406	100k 0.25W 5% carbon film	6
R2 L, R2 C, R2 R	40405	4.7k 0.25W 5% carbon film	3

Miscellaneous

1	70302	Knob, 3 pcs on DPS-12, 2 pcs on PSW-D112	
2	70312	Faceplate PSW-D112	
2	70311	Faceplate DPS-12	
3	70316	Amp PCB support	

Ref.#	PartNumber	Description	Qty
4	70150	Phase switch (also DPS-12 Video Contour switch)	1
5	70151 ⚠	Power switch Safety part	
6	70170	#4x0.5" Screws to secure input jack	
7	70171	#10 x 1" Screw machine screw Bolts for transformer 4 per unit	
8	70172	#10 keps Nuts for transformer 4 per unit	4
9	70173	#6 x 0.5" Screws for fuse PCB 2per unit	2
10	80116 ⚠	Transformer #4632 Safety part	1
11	80117 ⚠	250V, 2.0A, T type SLO BLO fuse Safety part	
12	80118 ⚠	Preamp board, D112,D115,DPS12 Safety part	
13	80119 ⚠	Power amp board D112, D115,DPS12 Safety part	
14	80120 ⚠	High level input PCB D112,D115,DPS12 Safety part	
15	108116	High level 5way binding post(pr)	(4) or (6)
16	108322	Six line RCA input jack	1
17	108323	Single RCA input jack (Rev0 version only)	1

Revisions

Date	Issue	Details
		R23 new part# 5175-392581
18/11/98	2	"R23(20k,.25W) to 3.9k 3W, U3 added"
19/11/98	3	"U2 changed to U4, D1(90V) to 62V,"
11/26/1998	4	"R61A added, R24(8.66k) to 8.45k"
12/1/1998	5	"R15(39k) to 38.3k, R18/R15A added, R42(330k) to 200k)"
1/20/1999	7	"R20(1%MF) to 5%CF, R15A(.5W) to .25W"
2/22/1999	9	"R46(1000k) to 470k, C21/CW/CZ changed to poly film"
6/8/1999	10	"R16/R17(2.4k,5W) to 1.8k, 5W. 2.4k (5W) can be used with 6.8, 3W metal oxide in parallel"
9/2/1999	11	"R16(4.7k) to 7.5k. C3(47n) to 100n, R9(3.9k) to 3.3k, R61(5.1k,2W) to 3.9k,3W. PCB now rev 3.2"

PSW-D112/DPS-12 ELECTRICAL PARTS LIST Rev1 PCB

Poweramp Board

Ref. #	Part Number	Description	Qty
Capacitors			
C1, 2	30710	2200uF 300-500 radial 100V +80 / -20% Electrolytic 105C	2
C3, 6, 21, 22,	30502/04	100N 400 axial 50V 0.2 mono ceramic	4
C7A, C7B	30521	100nF 400-600 axial 250V 0.2 mono ceramic or film	2
C10	30718	4u7F Radial Elect 100V 0.2 BP/NP Electrolytic DF1	1
C11	30523	330nF 400 axial 100V 0.2 mono ceramic	1
C20	30532	220nF 400 axial 250V 0.2 metal polyester	1
C24	30511	330nF 400 axial 50V 0.1 mono ceramic	1
C26	30508	10nF 400 axial 50V 0.1 mono ceramic	1
C27	30513	3n3F 400 axial 50V 0.1 mono ceramic	1
C32	30711	22uF 100-200 radial 35V +80/-20% Elect.	1
C40	30715	10uF 100-200 radial 16V +80/-20% Elect.	1
C41	30716	1uF 100 radial 16V +80/-20% Elect.	1
C42	30717	100uF 100-200 radial 16V +80/-20% Elect.	1
CZ	30505	100nF 400 axial 100V 0.2 mono ceramic	1
Diodes			
BR RECT	50100	RS604 6AMP	1
D1, 2	50105	1N4744A 400 axial 15V 1w Zener	2
D3	50101	1N5265B 400 axial 62V .5w Zener	1
D4, 7, 8, 11 13, 14	50104	1N4148 400 axial 0.05 Sig Diode	6
D5	50113	1N4735A 1W 6.2V ADDED TO PCB SOLDERSIDE	1
D6	50107	1N5234B 400 axial 6.2V .5w Zener	1
D10, 12	50112	1N5242B 400 axial 12V 0.05 .5w Zener	2
Resistors			
R1A, 1B, 1C R2A, 2B, 2C	40735	7.5k 600 axial 2W 0.05 metal	6
R3	40706	10M 400 axial .25W 0.05 carbon	1
R4	40740	33k 400 axial 1W 0.05 metal	1
R5	40732	56.2k 400 axial .25W 0.01 metal	1
R6	40111	47 400 axial .25W 0.05 carbon	1
R7A, 7B, 7C 8A, 8B	40738	10k 600 axial 2W 0.05 metal	5
R10A, 10B, 10C	40105	0.1 600 axial .5W 0.05 metal	3
R11. 12	40420	1k 400 axial .25W 0.05 carbon	2
R13, 31, 32	40417	47k 400 axial .25W 0.05 carbon	3
R14, 24	40718	3.3 400 axial .25W 0.05 carbon	2
R21	40405	4.7k 400 axial .25W 0.05 carbon	1
R22	40720	42.2 400 axial .25W 0.01 metal	1
R23	40415	470k 400 axial .25W 0.05 carbon	1
R25	40409	10k 400 axial .25W 0.05 carbon	1
R26	40713	5.6 400 axial .25W 0.05 carbon	1
R27, 30	40738	10k 600 axial 2W 0.05 carbon	2
R28, 29	40739	1.2k 400 axial .25W 0.05 carbon	2
R33	40427	23.7k 400 axial .25W 0.01 metal	1
R34	40403	10k 400 axial .25W 0.01 metal	1
R40	40420	1k 400 axial .25W 0.05 carbon	1
R41	40701	1000k 400 axial .25W 0.05 carbon	1
R42	40418	22k 400 axial .25W 0.05 metal	1
R43, 46	40701	1000k 400 axial .25W 0.05 carbon	2
R44	40406	100k 400 axial .25W 0.05 carbon	1
R45	40415	470k 400 axial .25W 0.05 carbon	1
R47, 48	40409	10k 400 axial .25W 0.05 carbon	2
R49	40726	15k 400 axial .25W 0.05 carbon	1
R50	40727	2.2k 400 axial .25W 0.05 carbon	1
R100	40733	12k 400 axial .25W 0.05 carbon	1
Integrated Circuit			
U1	60102	TL 064 DIP14 Quad OpAmp	1
Transistors			
Q1	60157	2N5457 TO92 25V N-chnl FET	1
Q10, 11	60155	2N5401 TO92 120V PNP 600mA	2
Q12	60156	2N4401 TO92 40V NPN 200mA	1
Miscellaneous			
L1	80121	220uH 0.05 rating, 0.05 tolerance MCI4742 Gapped E-core	
L2	80122	8.5uH 600 axial 0.05 rating, 0.05 tolerance Ferronics 92-133-B	
L3, L4	80122	8.5uH 600 axial 0.05 Ferronics 92-133-B	2
CMC	80100	2m2H 5 Amp Neosid 28-523C36	1
LED	n/a	MOLEX 3 PIN MALE	
AV SW	n/a	MOLEX 3 PIN MALE	
S64AMI	60302	Power Amp module SAFETY PART ⚠	1
On Faceplate	70151	SW SPST Power Switch	
On Harness	108327	2 Col LED 100 radial 3mm red/green	
On Harness	108327	DPDT On Harness push on/on	
On Harness	108327	LED 100 radial 1 colour green 3mm	
On Faceplate	80116	MCI4632 100VA Conc Whd TRX w/Therm Brkr Pri.	
FUSE	80117	2A SloBlo 1.25" 2 Amp Glass; On Fuse PCB	

Revisions/changes PSW-D112 Power Amp PCB

Designator	Early Rev	Later Rev
R5	43.2K	56.2K
R6	4.7	47
R15	100K	None
R34	4.7K	10K
Res Addition	None	220k - solder from J2 to R34 on component side of PCB (part# 40407)
Cap Addition	None	220 nf 250V - solder across +V and –V on power amp module, trace side of PCB (part# 30532)
CW	100 nf	None
D4	1N4148	1N4938 (part# 50115)

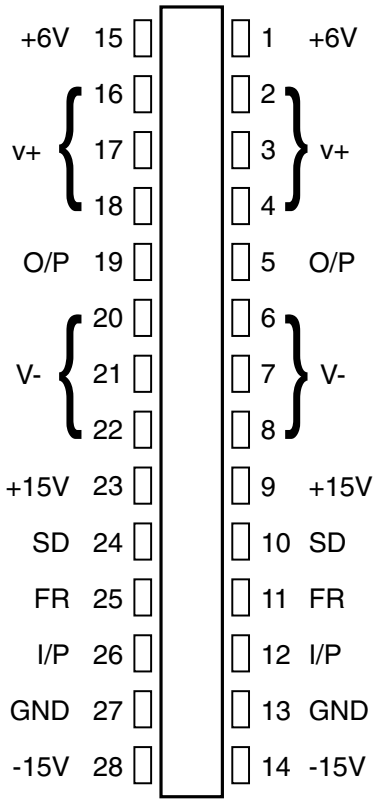
Preamp Board

Ref. #	Part Number	Description	Qty
Capacitors			
C1, 2	30707/04	200uF 200 radial 50V 0.2 BP Electrolytic	2
C3, 4, 5, 6	30101	220pF 400 axial 50V 0.2 mono ceramic	4
C7		0.0R Jumper 400 axial 50V	1
C8, 9	30517	68n 400 axial 50V 0.05 mono ceramic	2
C10, 11, 12, 13	30504	100nF 400 axial 50V 0.1 mono ceramic	4
C14, 15, 16, 17	30514	47nF 400 axial 50V 0.1 mono ceramic	4
C18, 19	30100	330pF 400 axial 50V 0.2 mono ceramic	2
C20, 21, 22, 23	30502/04	100nF 400 axial 50V 0.2 mono ceramic	4
Integrated Circuits			
U1	60100	LM324 DIP14 Quad OpAmp	1
U2	60102	TLO 64 DIP14 Low Power Quad OpAmp	1

Ref. #	Part Number	Description	Qty
Resistors			
R1, 2	40405	4.7k 400 axial .25W 0.05 carbon	2
R3, 4, 5, 6	40406	100k 400 axial .25W 0.05 carbon	4
R8, 9	40452	2.7k 400 axial .25W 0.05 carbon	2
R10	40453	20k 400 axial .25W 0.05 carbon	1
R11	40749	75k 400 axial .25W 0.05 carbon	1
R12	40504	45.3k 400 axial .25W 0.01 metal	1
R13	40412	33.2k 400 axial .25W 0.01 metal	1
R14	40709	68.1k 400 axial .25W 0.01 metal	1
R16	40434	38.3k 400 axial .25W 0.01 metal	1
R17	40455	169k 400 axial .25W 0.01 metal	1
R18, 19, 20, 22	40722	6.8k 400 axial .25W 0.05 carbon	4
R24, 26, 27, 30	40109	604 400 axial .25W 0.01 metal	4
R25, 28, 31, 32 33, 34	40438	20k 400 axial .25W 0.01 metal	6
R35	40451	137k 400 axial .25W 0.01 metal	1
Miscellaneous			
Level	40402	5k Single Pot on harness 0.2 LOG	1
Remote	n/a	Molex Connector 100 3pin female	1
LoPass control	40707	20k 4 gang Pot 0.2	1
Linear HiPass control	40707	20k 4 gang Pot 0.2	1
Phase Switch	70150	SW SPDT In Line	1
RCA CONN.	108321	Quad Right Angle Quad RCA	1
J1, 3		0.0 Jumper 400 axial .25W	2

PSW-D112/DPS-12 INTEGRATED CIRCUITS

S53AMI/S64AMI - Power Amp module SAFETY PART



NOTE: THE FOLLOWING PROCEDURES MUST BE FOLLOWED WHEN INSTALLING NEW S53AMI/S64AMI AMP MODULES: FAILURE TO FOLLOW ONE OR MORE OF THESE STEPS MAY RESULT IN THE INSTANT DESTRUCTION OF THE MODULE WHEN POWERED UP.

1) Align white indent marker on Amp Module with indent marker on main PCB; alternately observe position of label on the top of the module; incorrectly replacing the Module 180 in the PCB slot will result in its destruction.

2) All AC powered test instruments (meters, oscilloscopes, etc.) must have a floating ground, i.e. be connected to an isolation transformer.

3) Align and position the Amp Module before soldering.

4) Attach the amp Module with the mounting screws before soldering or powering up.

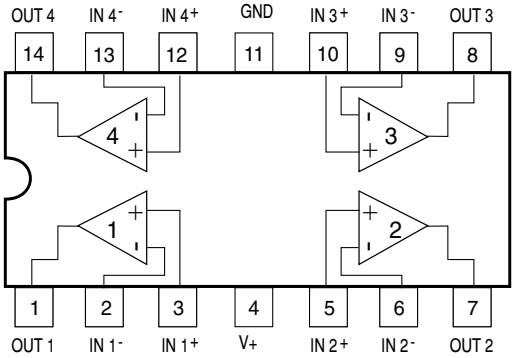
5) Use only rosin-core or non-acid core solder; thoroughly de-flux the surfaces after soldering.

If the new S53AMI/S64AMI Amp Module has larger mounting hole(s) in the case, and the stock screws no longer will fit, and screws of the proper type cannot be obtained locally order:

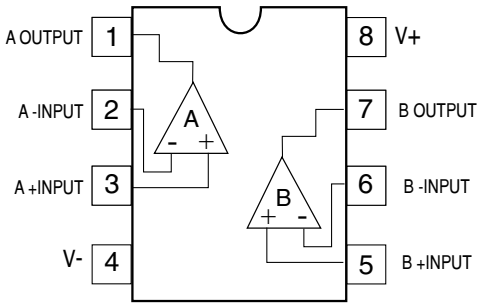
(2) part# 60301S (screws)

(2) part# 60301N (nuts)

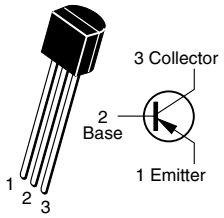
U1, U2 - (LM324 TL064) Quad Op Amp



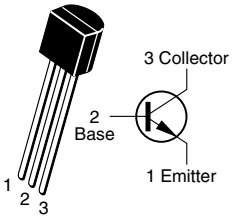
U3, U4 - (TLO 82) Dual Op Amp



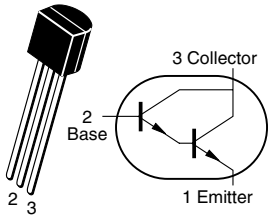
Q4, Q5, Q10, Q11 TR1 - (MPS A56) (2N5401) PNP Transistor



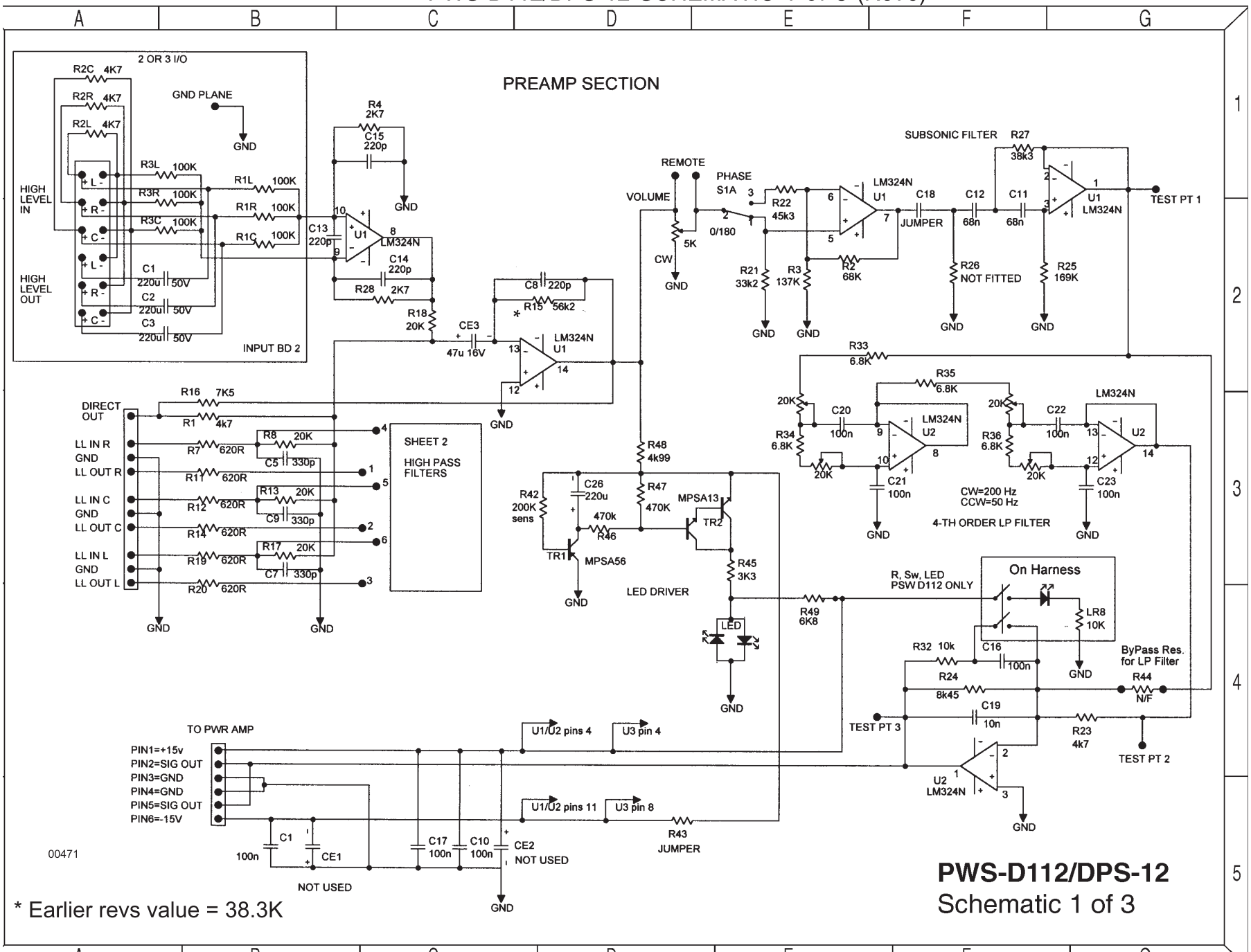
Q3 - (2N3904), **Q12** - (2N4401) NPN Transistor



TR2 - (MPS A13) 30V NPN(Darl) Transistor

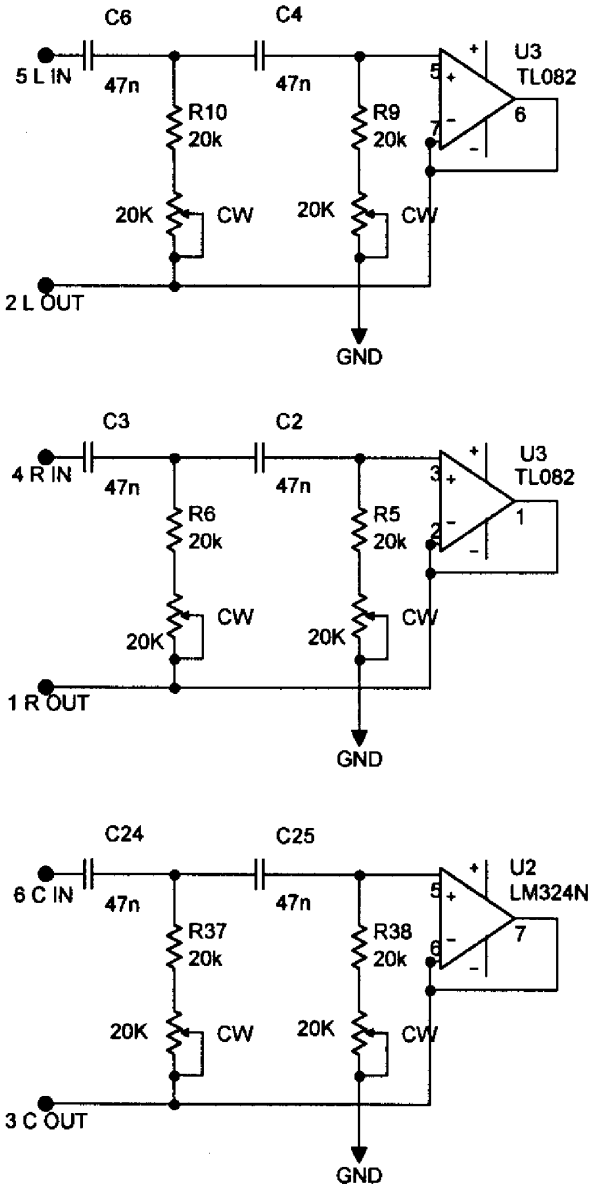


PWS-D112/DPS-12 SCHEMATIC 1 of 3 (Rev0)



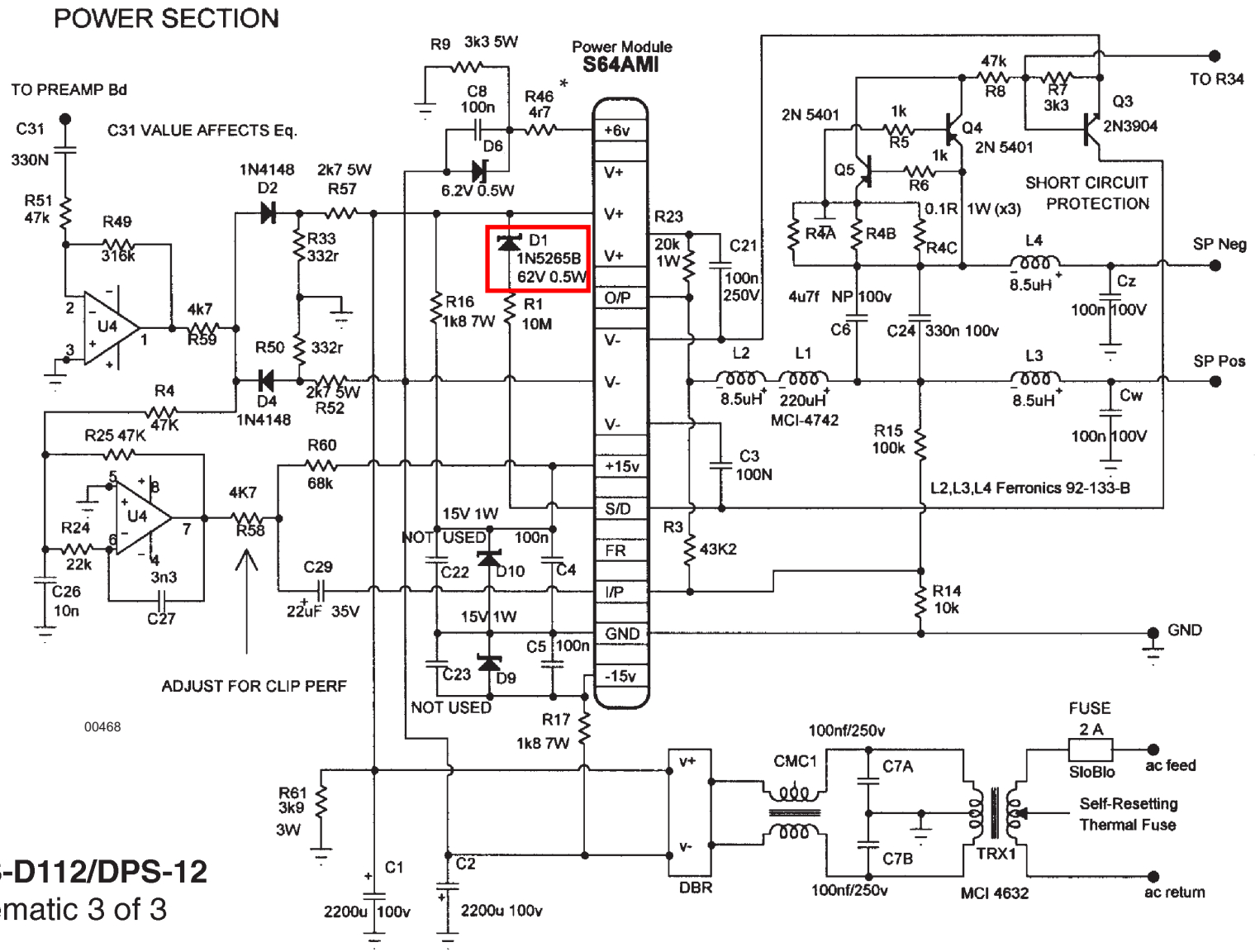
PWS-D112/DPS-12 SCHEMATIC 2 of 3 (Rev0)

HIGH PASS FILTERS



POT. 20K B

PWS-D112/DPS-12
Schematic 2 of 3



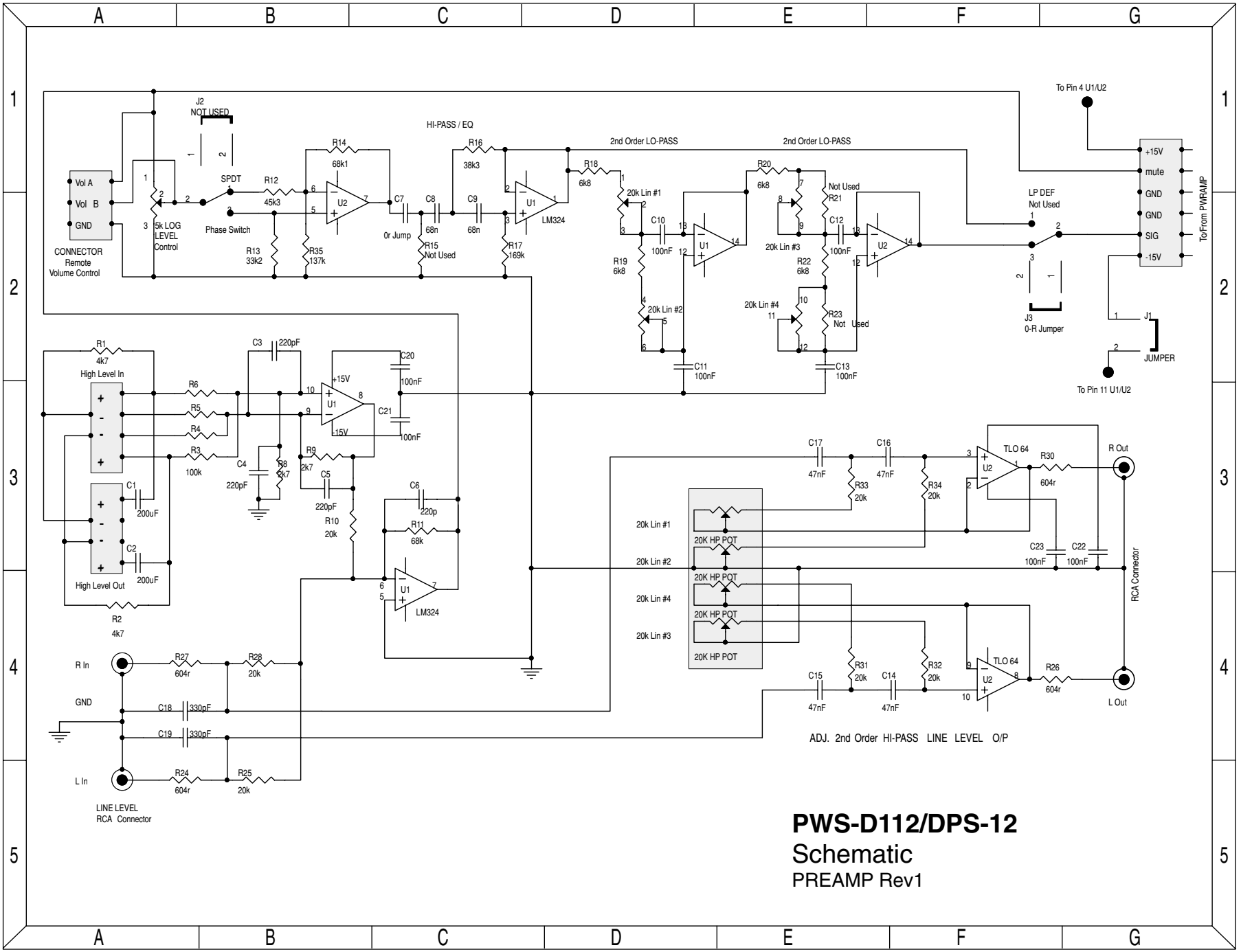
PWS-D112/DPS-12
Schematic 3 of 3

* Later revs value = 47 ohms

D1 - Early revisions had two 30v diodes in series. For replacement use single diode part# 50114

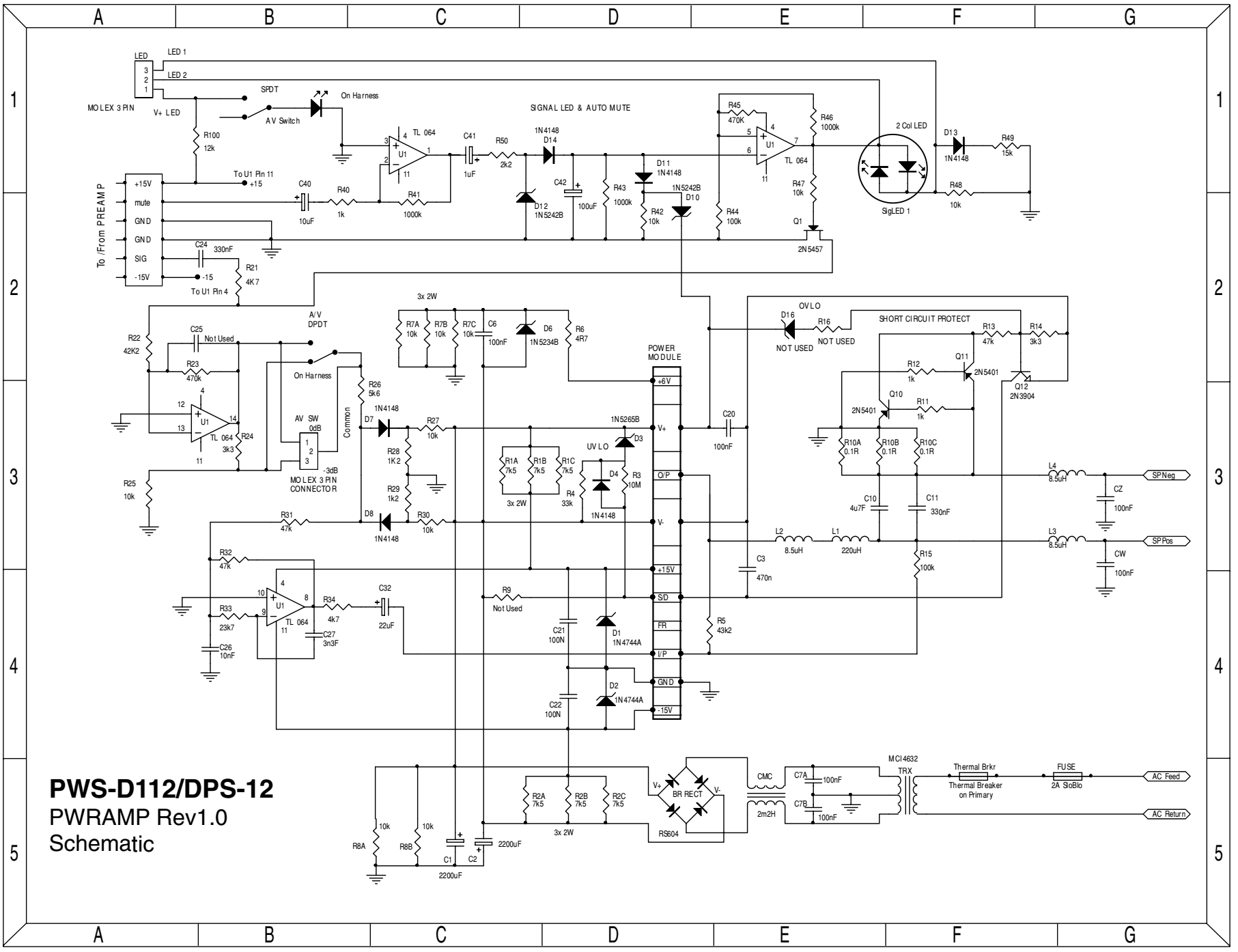
PWS-D112/DPS-12 SCHEMATIC 3 of 3 (Rev0)

PWS-D112/DPS-12 PREAMP SCHEMATIC Rev1



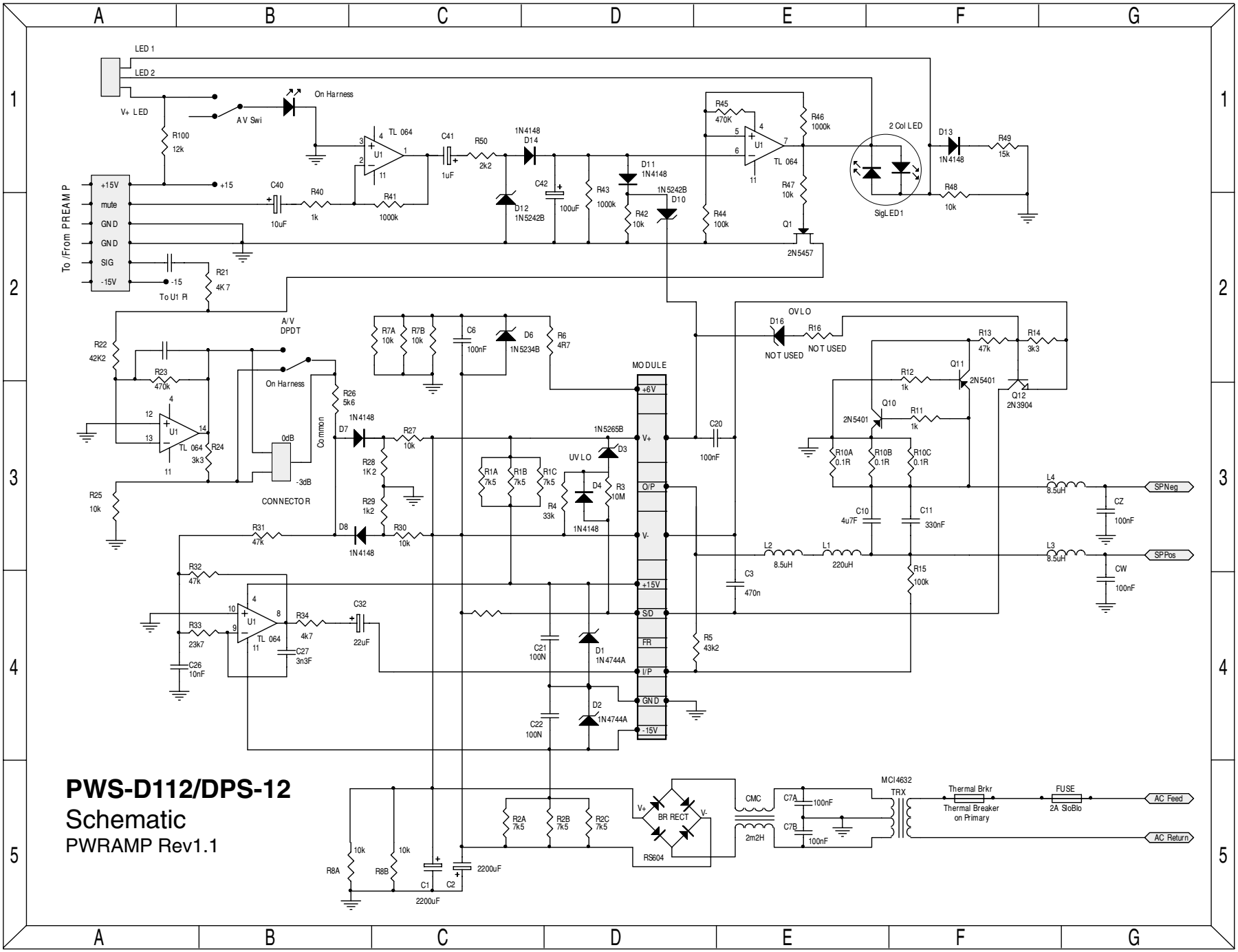
PWS-D112/DPS-12
Schematic
PREAMP Rev1

PWS-D112/DPS-12 POWERAMP SCHEMATIC Rev1.0



PWS-D112/DPS-12
PWRAMP Rev1.0
Schematic

PWS-D112/DPS-12 POWERAMP SCHEMATIC Rev1.1



PWS-D112/DPS-12
Schematic
PWRAMP Rev1.1